Dell PowerEdge FTOS Command Line Reference Guide for the M I/O Aggregator

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Notes, Cautions, and Warnings

NOTE: A NOTE indicates important information that helps you make better use of your computer.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

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1

About this Guide

This book provides information about the Dell Force10 operating software (FTOS) command line interface (CLI) on the Dell PowerEdge M I/O Aggregator. It includes some information about the protocols and features found in FTOS and on the Dell Force10 systems supported by FTOS.

This chapter includes:

- Objectives
- Audience
- Conventions
- Information Symbols
- Related Documents

Objectives

This document is intended as a reference guide for the FTOS CLI commands, with detailed syntax statements, usage information, and sample output examples.

For details about when to use the commands, refer to the *FTOS Configuration Guide*. This guide contains an Appendix with a list of the request for comment (RFCs) and management information base files (MIBs) supported.

Audience

This document is intended for system administrators who are responsible for configuring or maintaining networks. This document assumes you are knowledgeable in Layer 2 and Layer 3 networking technologies.

Conventions

This document uses the following conventions to describe command syntax:

Convention	Description
keyword	Keywords are in bold and must be entered in the CLI as listed.
parameter	Parameters are in italics and require a number or word to be entered in the CLI.
{X}	Keywords and parameters within braces must be entered in the CLI.
[X]	Keywords and parameters within brackets are optional.

x | y	Keywords and parameters separated by bar require you to choose one.
x || y	Keywords and parameters separated by a double bar enables you to choose any or all of them.

Related Documents

For more information about the system, refer to the following documents:

- *Dell PowerEdge Configuration Guide for the M I/O Aggregator*
- *Dell PowerEdge M I/O Aggregator Getting Started Guide*
- *Release Notes for the M I/O Aggregator* (FTOS version 8.3.17.0)

2

Before You Start

By following the instructions in the *Dell PowerEdge M I/O Aggregator Getting Started Guide* that is shipped with the product, you install the Aggregator in a Dell PowerEdge M1000e Enclosure.

The Aggregator installs with zero-touch configuration. After you power it on, an Aggregator boots up with default settings and auto-configures with software features enabled. This chapter describes the default settings and software features that are automatically configured at startup. Use the tasks described in the other chapters to reconfigure the Aggregator for customized network operation.

Default Settings

The I/O Aggregator provides zero-touch configuration with the following default configuration settings:

- Default user name (**root**)
- Password (**calvin**)
- VLAN (**vlan1**) and IP address for in-band management (**DHCP-assigned**)
- IP address for out-of-band (OOB) management (**DHCP-assigned**)
- Read-only SNMP community name (**public**)
- Broadcast storm control (**enabled**)
- Unregistered Multicast Packets flooding (**enabled)**
- IGMP snooping in all VLANs except the default VLAN (**enabled**)
- VLAN configuration (**all ports belong to all VLANs**)

You can change any of these default settings using the CLI. Refer to the appropriate chapter for details.

Note: You can also change many of the default settings using the chassis management controller (CMC) interface. For information about how to access the CMC to configure an Aggregator, refer to the *Dell PowerEdge M1000e Enclosure Hardware Owner's Manual* or *Dell Chassis Management Controller (CMC) User's Guide* on the Dell Support website at http://support.dell.com/support/edocs/systems/pem/en/index.htm.

Other Auto-Configured Settings

After the Aggregator powers on, it auto-configures and is operational with software features enabled, including:

- VLANs: All ports are configured as members of all (4094) VLANs. All VLANs are up and can send or receive layer 2 traffic. For more information, refer to VLANs.
- Data Center Bridging Capability Exchange Protocol (DCBX)

- Fibre Channel over Ethernet (FCoE) connectivity
- FCoE Initiation Protocol (FIP) snooping
- Hybrid ports: Ports are administratively up and auto-configured to operate as hybrid ports to transmit tagged and untagged VLAN traffic.
- iSCSI optimization
- IGMP snooping
- Jumbo frames: Ports are set to a maximum MTU of 12,000 bytes by default.
- Link aggregation: All uplink ports are configured in a single LAG (LAG 128).
- Link Layer Discovery Protocol (LLDP): Enabled on all ports.
- Link tracking: Enables server-facing links to be brought up only if the uplink port-channel (LAG 128) is up.
- Stacking: Stacking is supported only on the 40GbE ports on the base module. A single stack is limited to two Aggregators in the same chassis. Up to three stacks are supported in an M1000e chassis. To configure a switch stack, you must use the CLI. For more information, refer to Chapter 21, Stacking Commands.

DCB Support

DCB enhancements for data center networks are supported to eliminate packet loss and provision links with required bandwidth.

The Aggregator provides zero-touch configuration for DCB. The Aggregator auto-configures DCBX port roles to match the DCBX configuration in the ToR switches to which it connects through its uplink ports.

The Aggregator supports DCB only in standalone mode and not in the stacking mode.

FCoE Connectivity

Many data centers use Fibre Channel (FC) in storage area networks (SANs). Fibre Channel over Ethernet (FCoE) encapsulates Fibre Channel frames over Ethernet networks.

On an Aggregator, the internal ports support FCoE connectivity and connect to the converged network adapter (CNA) in blade servers. FCoE allows Fibre Channel to use 10-Gigabit Ethernet networks while preserving the Fibre Channel protocol.

The Aggregator also provides zero-touch configuration for FCoE configuration. The Aggregator auto-configures to match the FCoE settings used in the ToR switches to which it connects through its uplink ports.

iSCSI Operation

Support for iSCSI traffic is turned on by default when the Aggregator powers up. No configuration is required.

When the Aggregator powers up, it monitors known TCP ports for iSCSI storage devices on all interfaces. When a session is detected, an entry is created and monitored as long as the session is active.

The Aggregator also detects iSCSI storage devices on all interfaces and auto-configures to optimize performance. Performance optimization operations, such as Jumbo frame size support, STP port-state fast, and disabling of storm control on interfaces connected to an iSCSI storage device, are applied automatically.

CLI configuration is necessary only when the configuration includes iSCSI storage devices that cannot be automatically detected and when non-default QoS handling is required.

Link Aggregation

All uplink ports are configured in a single LAG (LAG 128). Server-facing ports are auto-configured as part of link aggregation groups if the corresponding server is configured for LACP-based NIC teaming. Static LAGs are not supported.

Tip: The recommended LACP timeout is long-timeout mode.

Link Tracking

By default, all server-facing ports are tracked by the operational status of the uplink LAG. If the uplink LAG goes down, the Aggregator loses its connectivity and is no longer operational; all server-facing ports are brought down.

Tip: If installed servers do not have connectivity to a ToR switch, check the Link Status LED of uplink ports on the Aggregator. If all LEDs are ON, check the LACP configuration on the ToR switch that is connected to the Aggregator to ensure the LACP is correctly configured.

VLANs

By default, all Aggregator ports belong to all 4094 VLANs and are members of untagged VLAN 1. You can use the CLI or CMC interface to configure only the required VLANs on a port.

When you configure VLANs on server-facing interfaces (ports 1 to 32), you can assign VLANs to a port or a range of ports by entering the vlan tagged or vlan untagged commands in interface configuration mode; for example:

```
FTOS(conf)# interface tengigabitethernet 0/2 - 4
FTOS(conf-if-range-te-0/2-4)# vlan tagged 5,7,10-12
FTOS(conf-if-range-te-0/2-4)# vlan untagged 3
```

Note: You can also use the CMC interface to configure VLANs.

Uplink LAG

The tagged VLAN membership of the uplink LAG is automatically configured based on the VLAN configuration of all server-facing ports (ports 1 to 32).

The untagged VLAN used for the uplink LAG is always the default VLAN.

Server-Facing LAGs

The tagged VLAN membership of a server-facing LAG is automatically configured based on the server-facing ports that are members of the LAG.

The untagged VLAN of a server-facing LAG is configured based on the untagged VLAN to which the lowest numbered server-facing port in the LAG belongs.

Tip: Dell Force10 recommends that you configure the same VLAN membership on all LAG member ports.

Stacking Mode

When you configure an Aggregator to operate in stacking mode (See "Configuring and Bringing Up a Stack" in the *Dell Force10 Configuration Guide for the M I/O Aggregator*), VLANs are reconfigured as follows:

If an Aggregator port belonged to all 4094 VLANs in standalone mode (default), all VLAN membership is removed and the port is assigned only to default VLAN 1. You must configure additional VLAN membership as necessary.

If you had manually configured an Aggregator port to belong to one or more VLANs (non-default) in standalone mode, the VLAN configuration is retained in stacking mode only on the master switch.

When you reconfigure an Aggregator from stacking to standalone mode:

Aggregator ports that you manually configured for VLAN membership in stacking mode retain their VLAN configuration in standalone mode.

To restore the default auto-VLAN mode of operation (in which all ports are members of all 4094 VLANs) on a port, enter the auto vlan command; for example:

```
FTOS(conf)# interface tengigabitethernet 0/2
FTOS(conf-if-te-0/2)# auto vlan
```

Where to Go From Here

You can customize the Aggregator for use in your data center network as necessary. To perform additional switch configuration, do one of the following:

- For remote out-of-band management, enter the OOB management interface IP address into a Telnet or SSH client and log in to the switch using the user ID and password to access the CLI.
- For local management using the CLI, use the attached console connection.
- For remote in-band management from a network management station, enter the VLAN IP address of the management port and log in to the switch to access the CLI.

If you installed the Aggregator in a stack, you can configure additional settings for switch stacking.

In case of an FTOS upgrade, you can check to see that an Aggregator is running the latest FTOS version by entering the show version command. To download an FTOS version, go to http://support.dell.com.

Refer to the appropriate chapter for detailed information on how to configure specific software settings.

3

CLI Basics

This chapter describes the command structure and command modes. The Dell Force10 operating software (FTOS) commands are in a text-based interface that allows you to use launch commands, change the command modes, and configure interfaces and protocols.

This chapter includes the following sections:

- Accessing the Command Line
- Multiple Configuration Users
- Navigating the Command Line Interface
- Obtaining Help
- Using the Keyword no
- Filtering show Commands
- Command Modes

Accessing the Command Line

When the system boots successfully, you are positioned on the command line in EXEC mode and *not* prompted to log in. You can access the commands through a serial console port or a Telnet session. When you Telnet into the switch, you are prompted to enter a login name and password.

Figure 3-1 is an example of a successful Telnet login session.

Figure 3-1. Login Example

```
telnet 172.31.1.53
Trying 172.31.1.53...
Connected to 172.31.1.53.
Escape character is '^]'.
Login: username
Password:
FTOS>
```

After you log into the switch, the prompt provides you with current command-level information (Table 3-1).

Multiple Configuration Users

When a user enters CONFIGURATION mode and another user(s) is already in that configuration mode, FTOS generates an alert warning message similar to Figure 3-2:

Figure 3-2. Configuration Mode User Alert

```
FTOS#conf

% Warning: The following users are currently configuring the system:

User "" on line console0
User "admin" on line vty0 ( 123.12.1.123 )
User "admin" on line vty1 ( 123.12.1.123 )
User "Irene" on line vty3 ( 123.12.1.321 )

FTOS#conf
```

When another user enters CONFIGURATION mode, FTOS sends a message similar to the following, (the user in this case is “admin” on vty2):

```
% Warning: User “admin” on line vty2 “172.16.1.210” is in configuration
```

Navigating the Command Line Interface

The command line interface (CLI) prompt displayed by FTOS is comprised of:

- “hostname”— the initial part of the prompt, “FTOS” by default. You can change it with the hostname command, as described in hostname.
- The second part of the prompt, reflecting the current CLI mode, is shown in Table 3-1.

The CLI prompt changes as you move up and down the levels of the command structure.

Table 3-1 lists the prompts and their corresponding command levels, called *modes*. Starting with CONFIGURATION mode, the command prompt adds modifiers to further identify the mode. The command modes are explained in Command Modes.

Table 3-1. Command Prompt and Corresponding Command Mode

Prompt	CLI Command Mode
FTOS>	EXEC
FTOS#	EXEC Privilege
FTOS(conf)#	CONFIGURATION
FTOS(conf-if-te-0/0)# FTOS(conf-if-vl-1)# FTOS(conf-if-ma-0/0)# FTOS(conf-if-range)#	INTERFACE
FTOS(conf-line-console)# FTOS(conf-line-vty)#	LINE
FTOS(conf-mon-sess)#	MONITOR SESSION

Obtaining Help

As soon as you are in a command mode, there are several ways to access help.

- To obtain a list of keywords at any command mode, do the following:
  - Enter a ? at the prompt or after a keyword. There must always be a space before the ?.
- To obtain a list of keywords with a brief functional description, do the following:
  - Enter help at the prompt.
- To obtain a list of available options, do the following:
  - Type a keyword followed by a space and a ?
- Type a partial keyword followed by a ?
  - A display of keywords beginning with the partial keyword is listed.

Figure 3-3 shows the results of entering ip ? at the prompt.

Figure 3-3. Partial Keyword Example

```
FTOS(conf)#ip ?
igmp                           Internet Group Management Protocol
route                          Establish static routes
telnet                         Specify telnet options
```

When entering commands, you can take advantage of the following time saving features:

- The commands are not case sensitive.
- You can enter partial (truncated) command keywords. For example, you can enter int tengig *interface* for the interface tengigabitethernet *interface* command.
- Use the **TAB** key to complete keywords in commands.
- Use the **up arrow** key to display the last enabled command.
- Use either the **Backspace** key or the **Delete** key to erase the previous character.

Use the **left** and **right arrow** keys to navigate left or right in the FTOS command line. Table 3-2 defines the key combinations valid at the FTOS command line.

Table 3-2. Short-cut Keys and their Actions

Key Combination	Action
CNTL-A	Moves the cursor to the beginning of the command line.
CNTL-B	Moves the cursor back one character.
CNTL-D	Deletes character at cursor.
CNTL-E	Moves the cursor to the end of the line.
CNTL-F	Moves the cursor forward one character.
CNTL-I	Completes a keyword.
CNTL-K	Deletes all characters from the cursor to the end of the command line.
CNTL-N	Return to more recent commands in the history buffer after recalling commands with Ctrl-P or the up arrow key.
CNTL-P	Recalls commands, beginning with the last command.
CNTL-U	Deletes the line.
CNTL-W	Deletes the previous word.

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Table 3-2. Short-cut Keys and their Actions

Key Combination	Action
CNTL-X	Deletes the line.
CNTL-Z	Comes back to EXEC mode from any CONFIGURATION mode.
Esc B	Moves the cursor back one word.
Esc F	Moves the cursor forward one word.
Esc D	Deletes all characters from the cursor to the end of the word.

Using the Keyword no

To disable, delete, or return to default values, use the no form of the commands. For most commands, if you type the keyword no in front of the command, you will disable that command or delete it from the running configuration. In this document, the no form of the command is described in the "Syntax" portion of the command description.

Syntax no {boot | default | enable | ftp-server | hardware | hostname | ip | line | logging | monitor | service | io-aggregator broadcast storm-control | snmp-server | username}

Defaults None

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Filtering show Commands

You can filter the display output of a show command to find specific information, to display certain information only, or to begin the command output at the first instance of a regular expression or phrase.

When you execute a show command, followed by a pipe (|) and one of the parameters listed below and a regular expression, the resulting output either excludes or includes those parameters, as defined by the parameter:

- except— display only text that does not match the pattern (or regular expression)
- find — search for the first occurrence of a pattern
- grep — display text that matches a pattern
- no-more — do not paginate the display output
- save — copy output to a file for future use

Note: FTOS accepts a space before or after the pipe, no space before or after the pipe, or any combination. For example:
FTOS#*command* | grep *tengigabit* |except *regular-expression* | find *regular-expression*

The grep command option has an ignore-case sub-option that makes the search case-insensitive. For example, the commands:

- show run | grep Ethernet returns a search result with instances containing a capitalized "Ethernet," such as `interface TenGigabitEthernet 0/0.`
- show run | grep ethernet does not return the search result above because it only searches for instances containing a non-capitalized "ethernet".
- show run | grep Ethernet ignore-case returns instances containing both "Ethernet" and "ethernet".

Displaying All Output

To display the output all at once (not one screen at a time), use the no-more command after the pipe. This is similar to the terminal length *screen-length* command except that the no-more option affects the output of just the specified command. For example:

```
FTOS#show running-config | no-more
```

Filtering Command Output Multiple Times

You can filter a single command output multiple times. To do this, place the save option as the last filter. For example:

```
FTOS# command | grep regular-expression | except regular-expression | grep
other-regular-expression | find regular-expression | no-more | save
```

Command Modes

To navigate to various CLI modes, use specific commands to launch each mode. Navigation to these modes is described in the following sections.

EXEC Mode

When you initially log in to the switch, by default you are logged into EXEC mode. This mode allows you to view settings and to enter EXEC Privilege mode to configure the device. While you are in EXEC mode, the > prompt is displayed following the "hostname" prompt (which is "FTOS" by default). You can change this using the hostname command. For more information, refer to the hostname command. Each mode prompt is preceded by the hostname.

EXEC Privilege Mode

The enable command accesses EXEC Privilege mode. If an administrator has configured an *Enable* password, you are prompted to enter the password here.

EXEC Privilege mode allows you to access all commands accessible in EXEC mode, plus other commands, such as to clear ARP entries and IP addresses. In addition, you can access CONFIGURATION mode to configure interfaces, routes, and protocols on the switch. While you are logged in to EXEC Privilege mode, the # prompt displays.

CONFIGURATION Mode

In EXEC Privilege mode, use the configure command to enter CONFIGURATION mode and configure routing protocols and access interfaces.

To enter CONFIGURATION mode:

1. Verify that you are logged in to EXEC Privilege mode.
2. Enter the configure command. The prompt changes to include (conf).

From this mode, you can enter INTERFACE mode using the interface command.

INTERFACE Mode

Use INTERFACE mode to configure interfaces or IP services on those interfaces. An interface can be physical (for example, a TenGigabit Ethernet port) or virtual (for example, the Null interface).

To enter INTERFACE mode:

1. Verify that you are logged into CONFIGURATION mode.
2. Enter the interface command followed by an interface type and interface number that is available on the switch.
3. The prompt changes to include the designated interface and slot/port number (Table 3-3).

Table 3-3. Interface prompts

Prompt	Interface Type
FTOS(conf-if-te-0/0)#	Ten Gigabit Ethernet interface followed by slot/port information
FTOS(conf-if-vl-1)#	VLAN Interface followed by VLAN number (range 1 to 4094)
FTOS(conf-if-ma-0/0)#	Management Ethernet interface followed by slot/port information
FTOS(conf-if-range)#	Designated interface range (used for bulk configuration; refer to group).

LINE Mode

Use LINE mode to configure console or virtual terminal parameters.

To enter LINE mode:

1. Verify that you are logged in to CONFIGURATION mode.
2. Enter the line command. You must include the keywords console or vty and their line number available on the switch.The prompt changes to include (config-line-console) or (config-line-vty).

You can exit this mode using the exit command.

MONITOR SESSION Mode

While in CONFIGURATION mode, use the monitor session command to enter MONITOR SESSION mode. Use this mode to configure port monitoring.

To enter MONITOR SESSION mode:

1. Verify that you are logged in to CONFIGURATION mode.
2. Use the monitor session command. You must enter the monitor session id. The prompt changes to include (conf-mon-sess).

You can return to CONFIGURATION mode using the exit command.

PROTOCOL LLDP Mode

While in CONFIGURATION mode, use the protocol lldp command to enter PROTOCOL LLDP mode. Use this mode to configure the LLDP protocol.

To enter MONITOR SESSION mode:

1. Verify that you are logged in to CONFIGURATION mode.
2. Use the protocol lldp command. You must enter the monitor session id. The prompt changes to include (conf-lldp).

You can return to CONFIGURATION mode using the exit command.

4

File Management

Overview

This chapter contains commands needed to manage the configuration files and includes other file management commands found in the Dell Force10 operating software (FTOS).

Basic File Management Commands

The commands included in this chapter are:

- boot system gateway
- boot system stack-unit
- cd
- copy
- copy running-config startup-config
- delete
- dir
- format flash
- logging coredump server
- logging coredump stack-unit
- pwd
- rename
- show boot system
- show file
- show file-systems
- show os-version
- show running-config
- show version
- upgrade boot
- upgrade system

boot system gateway

Specify the IP address of the default next-hop gateway for the management subnet.

Syntax boot system gateway *ip-address*

Parameters

ip-address	Enter an IP address in dotted decimal format.

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information Saving the address to the startup configuration file preserves the address in NVRAM in case the startup configuration file is deleted.

boot system stack-unit

Specify the location of the FTOS image to be used to boot the system.

Syntax boot system stack-unit <0-5 | all> {default | primary | secondary}

Parameters

0-5	Enter the stack member unit identifier of the stack member.
all	Enter this keyword to set the primary, secondary, and default images for the system.
default	Enter this keyword to set the default image path for the system.
primary	Enter this keyword to set the primary image path for the system.
secondary	Enter this keyword to set the secondary image path for the system.

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information The system first attempts to load the image from the primary path. If it fails to boot, the system will try to load the image from the secondary path and if that too fails, the system will load the default image.

cd

Change to a different working directory.

Syntax cd *directory*

Parameters

directory	(OPTONAL) Enter one of the following: • flash: (internal Flash) or any sub-directory • usbflash: (external Flash) or any sub-directory

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

copy

Copy one file to another location. FTOS supports IPv4 addressing for FTP, TFTP, and SCP (in the *hostip* field).

Syntax copy *source-file-url destination-file-url*

Parameters

file-url	Enter the following location keywords and information: • To copy a file from the internal FLASH, enter flash:// followed by the filename. • To copy the running configuration, enter the keyword running-config. • To copy the startup configuration, enter the keyword startup-config. • To copy a file on the external FLASH, enter usbflash:// followed by the filename.

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

FTOS supports a maximum of 100 files, at the root directory level, on both the internal and external Flash.

The usbflash commands are supported. For a list of approved USB vendors, refer to the FTOS Release Notes.

When copying a file to a remote location (for example, using Secure Copy [SCP]), enter only the keywords and FTOS prompts you for the rest of the information.

For example, when using SCP, you can enter copy running-config scp:
The running-config is the source, and the target is specified in the ensuing prompts. FTOS prompts you to enter any required information, as needed for the named destination—remote destination, destination filename, user ID and password, etc.

When you use the copy running-config startup-config command to copy the running configuration (the startup configuration file amended by any configuration changes made since the system was started) to the startup configuration file, FTOS creates a backup file on the internal flash of the startup configuration.

FTOS supports copying the running-configuration to a TFTP server or to an FTP server:

copy running-config tftp:

copy running-config ftp:

Example

Figure 4-1. copy running-config scp: Command Example

```
FTOS#copy running-config scp:
Address or name of remote host []: 10.10.10.1
Port number of the server [22]: 99
Destination file name [startup-config]: old_running
User name to login remote host: sburgess
Password to login remote host:

Password to login remote host? dilling
```

In this example — copy scp: flash: — specifying SCP in the first position indicates that the target is to be specified in the ensuing prompts. Entering flash: in the second position means that the target is the internal Flash. In this example the source is on a secure server running SSH, so the user is prompted for the UDP port of the SSH server on the remote host.

Example

Figure 4-2. Using scp to copy from an SSH Server

```
FTOS#copy scp: flash:
Address or name of remote host []: 10.11.199.134
Port number of the server [22]: 99
Source file name []: test.cfg
User name to login remote host: admin
Password to login remote host:
Destination file name [test.cfg]: test1.cfg
```

Related Commands

cd	Changes the working directory.

copy running-config startup-config

Copy running configuration to the startup configuration.

Syntax copy running-config startup-config {*duplicate*}

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information This command is useful for quickly making a changed configuration on one chassis available on external flash in order to move it to another chassis.

delete

Delete a file from the flash. Once deleted, files cannot be restored.

Syntax delete *flash: ([flash://]filepath) usbflash ([usbflash://] filepath)*

Parameters

flash-url	Enter the following location and keywords: • For a file or directory on the internal Flash, enter flash:// followed by the filename or directory name. • For a file or directory on the external Flash, enter usbflash:// followed by the filename or directory name.
no-confirm	(OPTIONAL) Enter the keyword no-confirm to specify that FTOS does not require user input for each file prior to deletion.

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

dir

Displays the files in a file system. The default is the current directory.

Syntax dir [*filename* | *directory name:*]

Parameters

filename | *directory name:*	(OPTIONAL) Enter one of the following: • For a file or directory on the internal Flash, enter flash:// followed by the filename or directory name. • For a file or directory on the external Flash, enter usbflash:// followed by the filename or directory name:

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 4-3. dir for the Internal Flash Command Example

```
FTOS#dir
Directory of flash:

  1  drwx       4096   Jan 01 1980 00:00:00 +00:00 .
  2  drwx       2048   Jul 19 2012 10:36:07 +00:00 ..
  3  drwx       4096   Apr 03 2012 20:25:02 +00:00 TRACE_LOG_DIR
  4  drwx       4096   Apr 03 2012 20:25:02 +00:00 CORE_DUMP_DIR
  5  d---       4096   Apr 03 2012 20:25:02 +00:00 ADMIN_DIR
  6  -rwx  506724352   Apr 19 2012 23:32:02 +00:00 out3
  7  -rwx  715651180   Apr 17 2012 23:17:30 +00:00 out1
  8  -rwx   30670080   May 18 2012 04:42:06 +00:00
FTOS-nav_ascii.bin
  9  -rwx         76   May 02 2012 05:37:42 +00:00 dhcpBindConflict
 10  -rwx          1   Jul 06 2012 07:30:44 +00:00 testhttp
 11  -rwx      56839   May 17 2012 01:05:24 +00:00 writefru
 12  -rwx     150227   Jun 07 2012 16:57:24 +00:00 aaa
 13  -rwx     150227   Jun 07 2012 17:31:52 +00:00 bbb
 14  -rwx        561   Jun 26 2012 06:36:46 +00:00 jumpstartcfg
 15  -rwx     149553   Jul 04 2012 04:27:48 +00:00
startup-config.bak
 16  -rwx       4835   Jul 19 2012 10:34:28 +00:00 startup-config
 17  -rwx       8373   Jul 19 2012 06:44:34 +00:00 startup-config-1

flash: 2143281152 bytes total (836874240 bytes free)
FTOS#
```

Related Commands

cd	Changes the working directory.

format flash

Erase all existing files and reformat the filesystem in the internal flash memory. After the filesystem is formatted, files cannot be restored.

Syntax format {flash: | usbflash:}

Default flash memory

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information You must include the colon (:) when entering this command.

△ **Caution:** This command deletes all files, including the startup configuration file. So, after executing this command, consider saving the running config as the startup config (use the write memory command or the copy run start command).

Related Commands

copy	Copies the current configuration to either the startup-configuration file or the terminal.
show file	Displays the contents of a text file in the local filesystem.
show file-systems	Displays information about the file systems on the system.

logging coredump server

Designate a server to upload core dumps.

Syntax

logging coredump server {*ipv4-address*} username *name* password [*type*] *password*

Parameters

{*ipv4-address*}	Enter the server IPv4 address (A.B.C.D)
name	Enter a username to access the target server.
type	Enter the password type: • Enter 0 to enter an unencrypted password. • Enter 7 to enter a password that has already been encrypted using a Type 7 hashing algorithm.
password	Enter a password to access the target server.

Defaults

Crash kernel files are uploaded to flash by default.

Command Modes

CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

Because flash space may be limited, using this command ensures your entire crash kernel files are uploaded successfully and completely. Only a single coredump server can be configured. Configuration of a new coredump server over-writes any previously configured server.

Note: You must disable logging coredump stack-unit before you designate a new server destination for your core dumps.

Related Commands

logging coredump stack-unit	Enable the kernel coredump

logging coredump stack-unit

Enable the coredump.

Syntax

logging coredump stack-unit all

Command Modes

CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

The Kernel core dump can be large and may take up to five to 30 minutes to upload. FTOS does not overwrite application core dumps so delete them as necessary to conserve space on the flash; if the flash is out of memory, the coredump is aborted. FTOS completes the coredump process and waits until the upload is complete before rebooting the system.

Related Commands

logging coredump server	Designates a sever to upload kernel core-dumps.

pwd

Displays the current working directory.

Syntax pwd

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 4-4. pwd Command Example

```
FTOS#pwd
flash:
FTOS#
```

Related Commands

cd	Changes the working directory.

rename

Rename a file in the local file system.

Syntax rename *url url*

Parameters

url	Enter the following keywords and a filename: • For a file on the internal Flash, enter flash:// followed by the filename. • For a file on the external Flash, enter usbflash:// followed by the filename.

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

show boot system

Displays information about boot images currently configured on the system.

Syntax show boot system stack-unit {0-5 | all}

Parameters

0-5	Enter this information to display the boot image information of only the entered stack-unit
all	Enter this keyword to display the boot image information of all the stack-units in the stack

Defaults none

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 4-5. show boot system Command Example

```
FTOS#show boot system stack-unit all

Current system image information in the system:
===============================================

Type          Boot Type     A                         B
-----------------------------------------------------------------
Stack-unit 0 is not present.
Stack-unit 1  DOWNLOAD BOOT 9-1-0-218                 9-1-0-202
Stack-unit 2 is not present.
Stack-unit 3 is not present.
Stack-unit 4 is not present.
Stack-unit 5 is not present.
FTOS#
```

show file

Displays contents of a text file in the local filesystem.

Syntax show file *url*

Parameters

url	Enter one of the following: • For a file on the internal Flash, enter flash:// followed by the filename. • For a file on the external Flash, enter usbflash:// followed by the filename.

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 4-6. show file Command Example (Partial)

```
FTOS#show file flash://startup-config
! Version E8-3-17-38
boot system stack-unit 1 primary tftp://10.11.9.21/dv-m1000e-2-b2
boot system stack-unit 1 default system: A:
boot system gateway 10.11.209.62
!
hostname FTOS
--More--
FTOS#
```

Related Commands

format flash	Erases all existing files and reformats the filesystem in the internal flash memory.
show file-systems	Displays information about the file systems on the system.

show file-systems

Displays information about the file systems on the system.

Syntax show file-systems

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 4-7. show file-system Command Example

```
FTOS#show file-systems

      Size(b)     Free(b)      Feature      Type   Flags  Prefixes
   2143281152   836874240        FAT32 USERFLASH      rw  flash:
            -           -            -   network      rw  ftp:
            -           -            -   network      rw  tftp:
            -           -            -   network      rw  scp:
FTOS#
```

Table 4-1. show file-systems Command Output Fields

Field	Description
Size(b)	Lists the size in bytes of the storage location. If the location is remote, no size is listed.
Free(b)	Lists the available size in bytes of the storage location. If the location is remote, no size is listed.
Feature	Displays the formatted DOS version of the device.
Type	Displays the type of storage. If the location is remote, the word `network` is listed.
Flags	Displays the access available to the storage location. The following letters indicate the level of access: • r = read access • w = write access
Prefixes	Displays the name of the storage location.

Related Commands

format flash	Erases all existing files and reformats the filesystem in the internal flash memory.
show file	Displays the contents of a text file in the local filesystem.

show os-version

Displays the release and software image version information of the image file specified.

Syntax show os-version [*file-url*]

Parameters

file-url	(OPTIONAL) Enter the following location keywords and information: • For a file on the internal Flash, enter flash:// followed by the filename. • For a file on an FTP server, enter ftp://*user:password@hostip/filepath* • For a file on a TFTP server, enter tftp://*hostip/filepath* • For a file on the external Flash, enter usbflash:// followed by the filename.

Defaults none

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

Note: A filepath that contains a dot (**.**) is not supported.

Example

Figure 4-8. show os-version Command Example

```
FTOS#show os-version

RELEASE IMAGE INFORMATION :
------------------------------------------------------------------------
      Platform          Version        Size           ReleaseTime
 IOM-Series:  XL        8-3-17-38    31603078    Jul 19 2012 06:02:28

TARGET IMAGE INFORMATION :
------------------------------------------------------------------------
          Type          Version                    Target    checksum
       runtime        8-3-17-38        Control Processor      passed

CPLD IMAGE INFORMATION :
------------------------------------------------------------------------
         Card                        CPLD Name    Version
 Stack-unit 1                IOM SYSTEM CPLD          6

FTOS#
```

show running-config

Displays the current configuration and changes from the default values.

Syntax show running-config [*entity*] [configured] [status]

Parameters

entity	(OPTIONAL) Enter one of the keywords listed below to display that entity's current (non-default) configuration. Note that, if nothing is configured for that entity, nothing is displayed and the prompt returns: • boot for the current boot configuration • ftp for the current FTP configuration • igmp for the current IGMP configuration • interface for the current interface configuration • iscsi for the current ISCSI configuration • line for the current line configuration • lldp for the current LLDP configuration • logging for the current logging configuration

	• management-route for the current Management port forwarding configuration • monitor for the current Monitor configuration • snmp for the current SNMP configuration • uplink-state-group for the uplink state group configuration • users for the current users configuration
status	(OPTIONAL) Enter the keyword status to display the checksum for the running configuration and the start-up configuration.

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 4-9. show running-config Command Example (Partial)

```
FTOS#show running-config
Current Configuration ...
! Version E8-3-17-38
! Last configuration change at Mon Jul 23 14:34:31 2012 by default
!
boot system stack-unit 1 primary tftp://10.11.9.21/dv-m1000e-2-b2
boot system stack-unit 1 default system: A:
boot system gateway 10.11.209.62
!
redundancy auto-synchronize full
!
service timestamps log datetime
!
hostname FTOS

...
```

Example

Figure 4-10. show running-config Command Example

```
FTOS#show running-config status
running-config bytes 5063, checksum 0xF6F801AC
startup-config bytes 4835, checksum 0x764D3787
FTOS#
```

Usage Information The status option allows you to display the size and checksum of the running configuration and the startup configuration

show version

Displays the current FTOS version information on the system.

Syntax show version

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example **Figure 4-11. show version Command Example**

```
FTOS#show version
Dell Force10 Real Time Operating System Software
Dell Force10 Operating System Version: 1.0
Dell Force10 Application Software Version: E8-3-17-38
Copyright (c) 1999-2012 by Dell Inc. All Rights Reserved.
Build Time: Thu Jul 19 05:59:59 PDT 2012
Build Path: /sites/sjc/work/swsystems01-2/ravisubramani/ravis-8317/SW/SRC/
Cp_src/Tacacs
FTOS uptime is 4 day(s), 4 hour(s), 3 minute(s)

System image file is "dv-m1000e-2-b2"

System Type: I/O-Aggregator
Control Processor: MIPS RMI XLP with 2147483648 bytes of memory.

256M bytes of boot flash memory.

  1 34-port GE/TE (XL)
 56 Ten GigabitEthernet/IEEE 802.3 interface(s)
FTOS#
```

Table 4-2. show version Command Fields

Lines beginning with	Description
Dell Force10 Network...	Name of the operating system
Dell Force10 Operating...	OS version number
Dell Force10 Application...	Software version
Copyright (c)...	Copyright information
Build Time...	Software build’s date stamp
Build Path...	Location of the software build files loaded on the system
Dell Force10 uptime is...	Amount of time the system has been up
System image...	Image file name
Chassis Type:	System type (M I/O Aggregator)
Control Processor:...	Control processor information and amount of memory on processor.
256M bytes...	Amount of boot flash memory on the system.
1 34-Port...	Hardware configuration of the system, including the number and type of physical interfaces available.

upgrade boot

Upgrade the bootflash image or bootselector image.

Syntax upgrade boot {all | bootflash-image | bootselector-image} stack-unit {0-5 | all} {booted | flash: |ftp: | tftp: | usbflash:} (A: | B:}

Parameters

all	Enter this keyword to change both the bootflash and bootselecter images.
bootflash-image	Enter this keyword to change the bootflash image.
bootselector-image	Enter this keyword to change the bootselector image
0-5	Enter this keyword to upgrade only the mentioned stack-unit

all	Enter this keyword to upgrade all the member stack-units
booted	Enter this keyword to upgrade from the current image in the M I/O Aggregator.
ftp	After entering this keyword you can either follow it with the location of the source file in this form: *//userid:password@hostip/filepath*, or press **Enter** to launch a prompt sequence.
tftp	After entering this keyword you can either follow it with the location of the source file in this form: *//hostlocation/filepath*, or press **Enter** to launch a prompt sequence.
flash	After entering this keyword you can either follow it with the location of the source file in this form*://filepath*, or press **Enter** to launch a prompt sequence.
usbflash	After entering this keyword you can either follow it with the location of the source file in this form*://filepath*, or press **Enter** to launch a prompt sequence..
A	Enter this keyword to upgrade the bootflash partition A
B	Enter this keyword to upgrade the bootflash partition B

Defaults none

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information You must reload FTOS after executing this command.

Example

Figure 4-12. upgrade boot Command Example

```
FTOS#upgrade boot ?
all                     Upgrade both boot flash image and selector image
bootflash-image         Upgrade boot flash image
bootselector-image      Upgrade boot selector image
FTOS#
```

upgrade system

Upgrade the bootflash image or system image.

Syntax upgrade system {flash: | ftp: | scp: | tftp: | usbflash: | stack-unit {0-5 | all} {A: | B:}

Parameters

0-5	Enter this keyword to upgrade only the mentioned stack-unit
all	Enter this keyword to upgrade all the member units of the stack
ftp	After entering this keyword you can either follow it with the location of the source file in this form: *//userid:password@hostip/filepath*, or press **Enter** to launch a prompt sequence.
scp	After entering this keyword you can either follow it with the location of the source file in this form: *//userid:password@hostip/filepath*, or press **Enter** to launch a prompt sequence.
tftp	After entering this keyword you can either follow it with the location of the source file in this form: *//hostlocation/filepath*, or press **Enter** to launch a prompt sequence.

flash	After entering this keyword you can either follow it with the location of the source file in this form:*//filepath*, or press **Enter** to launch a prompt sequence.
usbflash	After entering this keyword you can either follow it with the location of the source file in this form:*//filepath*, or press **Enter** to launch a prompt sequence..
A	Enter this keyword to upgrade the bootflash partition A
B	Enter this keyword to upgrade the bootflash partition B

Defaults none

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information You must reload FTOS after executing this command. Use the command upgrade system stack-unit to copy FTOS from the management unit to one or more stack members.

Example

Figure 4-13. upgrade system Command Example

```
FTOS#upgrade system ?
flash:                  Copy from flash file system (flash://filepath)
ftp:                    Copy from remote file system, IPv4 or IPv6, (ftp:/
/userid:password@hostip/filepath)
scp:                    Copy from remote file system, IPv4 or IPv6, (scp:/
/userid:password@hostip/filepath)
stack-unit              Sync image to the stack-unit
tftp:                   Copy from remote file system, IPv4 or IPv6, (tftp:/
/hostip/filepath)
usbflash:               Copy from usbflash file system (usbflash://
filepath)
FTOS#
```

5

Control and Monitoring

This chapter describes control and monitoring for the M I/O Aggregator.

Commands

This chapter includes the following commands:

clear alarms	show debugging
clear command history	show diag
configure	show environment
debug cpu-traffic-stats	show inventory
debug ifm trace-flags	show memory
disable	show processes cpu
enable	show processes ipc flow-control
end	show processes memory
exit	show server-interfaces
ftp-server enable	show system
ftp-server topdir	show revision
ftp-server username	show tech-support
hostname	show uplink brief
ip telnet server enable	show util-threshold cpu
ip telnet source-interface	show util-threshold memory
line	ssh-peer-stack-unit
ping	telnet-peer-stack-unit
reload	terminal length
service timestamps	terminal xml
show alarms	terminal monitor
show command-history	traceroute
show configuration lock	undebug all
show cpu-traffic-stats	write

clear alarms

Clear the alarms on the system.

Syntax clear alarms

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information This command clears alarms that are no longer active. If an alarm situation is still active, it is seen in the system output.

clear command history

Clear the command history log.

Syntax clear command history

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Related Commands

show command-history	Displays a buffered log of all commands entered by all users along with a time stamp.

configure

Enter the CONFIGURATION mode from EXEC Privilege mode.

Syntax configure [terminal]

Parameters

terminal	(OPTIONAL) Enter the keyword terminal to specify that you are configuring from the terminal.

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 5-1. configure Command Example

```
FTOS#configure
FTOS(conf)#
```

debug cpu-traffic-stats

Enable the collection of CPU traffic statistics.

Syntax debug cpu-traffic-stats

Defaults Disabled

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information This command enables (and disables) the collection of CPU traffic statistics from the time this command is executed (not from system boot). However, excessive traffic received by a CPU automatically triggers (turns on) the collection of CPU traffic statistics. Use the show configuration lock to view the traffic statistics.

If excessive traffic is received by CPU, traffic is rate controlled

Note: This command must be enabled before the show configuration lock command displays traffic statistics. Dell Force10 recommends disabling debugging (no debug cpu-traffic-stats) after troubleshooting is complete.

Related Commands

show configuration lock	Displays the cpu traffic statistics

debug ifm trace-flags

Turn on the IFM internal trace-flags.

Syntax debug ifm trace-flags *trace-flags*

Disable this command using the no debug ifm trace-flags command.

Parameters

trace-flag	Enter a hexadecimal number representing the trace-flag.

Defaults None

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information Disable this command using the no debug ifm trace-flags command.

Note: Use this command only when you are working directly with a technical support representative to troubleshoot a problem. Do not use this command unless a technical support representative instructs you to do so.

disable

Return to EXEC mode.

Syntax disable [*level*]

Parameters

level	(OPTIONAL) Enter a number for a privilege level of the FTOS. Range: 0 to 15. Default: 1

Defaults 1

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

enable

Enter the EXEC Privilege mode or any other privilege level configured. After entering this command, you may need to enter a password.

Syntax enable [*level*]

Parameters

level	(OPTIONAL) Enter a number for a privilege level of FTOS. Range: 0 to 15. Default: 15

Defaults 15

Command Modes EXEC

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information Users entering EXEC Privilege mode or any other configured privilege level can access configuration commands. To protect against unauthorized access, use the enable password command to configure a password for the enable command at a specific privilege level. If no privilege level is specified, the default is privilege level 15.

Related Commands

enable password	Configures a password for the enable command and to access a privilege level.

end

Return to the EXEC Privilege mode from other command modes (for example, CONFIGURATION mode).

Syntax end

Command Modes

- CONFIGURATION
- LINE
- INTERFACE
- MONITOR SESSION
- PROTOCOL LLDP

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Related Commands

exit	Returns to the lower command mode.

exit

Return to the lower command mode.

Syntax exit

Command Modes

- EXEC Privilege
- CONFIGURATION
- LINE
- INTERFACE
- PROTOCOL LLDP

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Related Commands

end	Returns to EXEC Privilege command mode.

ftp-server enable

Enable the FTP server functions on the system.

Syntax ftp-server enable

Defaults Disabled.

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 5-2. Logging on to an FTP Server Example

```
morpheus% ftp 10.31.1.111
Connected to 10.31.1.111.
220 Dell Force10 (1.0) FTP server ready
Name (10.31.1.111:dch): dch
331 Password required
Password:
230 User logged in
ftp> pwd
257 Current directory is "flash:"
ftp> dir
200 Port set okay
150 Opening ASCII mode data connection
  size          date       time       name
--------       ------     ------    --------
     512    Jul-20-2004 18:15:00   tgtimg
     512    Jul-20-2004 18:15:00   diagnostic
     512    Jul-20-2004 18:15:00   other
     512    Jul-20-2004 18:15:00   tgt
226 Transfer complete
329 bytes received in 0.018 seconds (17.95 Kbytes/s)
ftp>
```

Related Commands

ftp-server topdir	Sets the directory to be used for incoming FTP connections.
ftp-server username	Sets a username and password for incoming FTP connections.

ftp-server topdir

Specify the top-level directory to be accessed when an incoming FTP connection request is made.

Syntax ftp-server topdir *directory*

Parameters

directory	Enter the directory path.

Defaults The internal flash is the default directory.

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information After you enable FTP server functions with the ftp-server enable command, Dell Force10 recommends specifying a top-level directory path. Without a top-level directory path specified, the FTOS directs users to the flash directory when they log in to the FTP server.

Related Commands

ftp-server enable	Enables FTP server functions on the M I/O Aggregator.
ftp-server username	Sets a username and password for incoming FTP connections to the M I/O Aggregator.

ftp-server username

Create a user name and associated password for incoming FTP server sessions.

Syntax ftp-server username *username* password [*encryption-type*] *password*

Parameters

username	Enter a text string up to 40 characters long as the user name.
password *password*	Enter the keyword password followed by a string up to 40 characters long as the password. Without specifying an encryption type, the password is unencrypted.
encryption-type	(OPTIONAL) After the keyword password enter one of the following numbers: • 0 (zero) for an unecrypted (clear text) password • 7 (seven) for hidden text password.

Defaults Not enabled.

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

hostname

Set the host name of the system.

Syntax hostname *name*

Parameters

name	Enter a text string, up to 32 characters long.

Defaults FTOS

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

ip telnet server enable

Enable the Telnet server on the switch.

Syntax ip telnet server enable

To disable the Telnet server, use the no ip telnet server enable command.

Defaults Enabled

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

ip telnet source-interface

Set an interface's IP address as the source address in outgoing packets for Telnet sessions.

Syntax

ip telnet source-interface *interface*

Parameters

interface	Enter the following keywords and slot/port or number information: • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information. • For VLAN interface, enter the keyword vlan followed by a number from 1 to 4094.

Defaults

The IP address on the system that is closest to the Telnet address is used in the outgoing packets.

Command Modes

CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Related Commands

telnet	Telnets to another device.

line

Enable and configure console and virtual terminal lines to the system. This command accesses LINE mode, where you can set the access conditions for the designated line.

Syntax

line {console 0 | vty *number* [*end-number*]}

Parameters

console 0	Enter the keyword console 0 to configure the console port. The console option is <0-0>.
vty *number*	Enter the keyword vty followed by a number from 0 to 9 to configure a virtual terminal line for Telnet sessions. The system supports 10 Telnet sessions.
end-number	(OPTIONAL) Enter a number from 1 to 9 as the last virtual terminal line to configure. You can configure multiple lines at one time.

Defaults

Not configured

Command Modes

CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

You cannot delete a terminal connection.

Related Commands

show memory	View current memory usage on the M I/O Aggregator..

ping

Test connectivity between the system and another device by sending echo requests and waiting for replies.

Syntax

ping [*host* | *ip-address*] [*count* {*number* | *continuous*}] [*datagram-size*] [*timeout*] [*source (ip src-ipv4-address)* | *interface*] [*tos*] [*df-bit (y|n)*] [*validate-reply(y|n)*] [*pattern pattern*] [*sweep-min-size*] [*sweep-max-size*] [*sweep-interval*] [*ointerface (ip src-ipv4-address)* | *interface*]

Parameter

host	(OPTIONAL) Enter the host name of the devices to which you are testing connectivity.
ip-address	(OPTIONAL) Enter the IPv4 address of the device to which you are testing connectivity. The address must be in the dotted decimal format.
count	Enter the number of echo packets to be sent. *number*: 1- 2147483647 *Continuous*: transmit echo request continuously Default: 5
datagram size	Enter the ICMP datagram size. Range: 36 - 15360 bytes Default: 100
timeout	Enter the interval to wait for an echo reply before timing out. Range: 0 -3600 seconds Default: 2 seconds
source	Enter the IPv4 source ip address or the source interface. • Enter the IP address in A.B.C.D format • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information. • For a VLAN interface, enter the keyword vlan followed by a number from 1 to 4094.
tos	Enter the type of service required. Range: 0-255 Default: 0
df-bit	Enter Y or N for the **don't fragment** bit in IPv4 header • N: Do not set the **don't fragment** bit • Y: Do set **don't fragmen**t bit Default is No.
validate-reply	Enter Y or N for reply validation. • N: Do not validate reply data • Y: Do validate reply data Default is No.
pattern *pattern*	Enter the IPv4 data pattern. Range: 0-FFFF Default: 0xABCD
sweep-min-size	Enter the minimum size of datagram in sweep range. Range: 52-15359 bytes
sweep-max-size	Enter the maximum size of datagram in sweep range. Range: 53-15359 bytes

sweep-interval	Enter the incremental value for sweep size. 1-15308 seconds
ointerface	Enter the outgoing interface for multicast packets. • Enter the IP address in A.B.C.D format • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information. • For a VLAN interface, enter the keyword vlan followed by a number from 1 to 4094.

Defaults See parameters above.

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information When you enter the ping command without specifying an IP address (Extended Ping), you are prompted for a target IP address, a repeat count, a datagram size (up to 1500 bytes), a timeout in seconds, and for Extended Commands. For information on the ICMP message codes that return from a ping command, refer to Chapter 26, Internet Control Message Protocol (ICMP) Message Types.

Figure 5-3. ping (IPv4) Command Example

```
FTOS#ping 172.31.1.255

Type Ctrl-C to abort.

Sending 5, 100-byte ICMP Echos to 172.31.1.255, timeout is 2 seconds:
Reply to request 1 from 172.31.1.208     0 ms
Reply to request 1 from 172.31.1.216     0 ms
Reply to request 1 from 172.31.1.205     16 ms
:
:
Reply to request 5 from 172.31.1.209     0 ms
Reply to request 5 from 172.31.1.66      0 ms
Reply to request 5 from 172.31.1.87      0 ms

FTOS#
```

reload

Reboot FTOS.

Syntax reload

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information If there is a change in the configuration, FTOS prompts you to save the new configuration. Or you can save your running configuration with the copy running-config command.

Related Commands

reset stack-unit	Resets any designated stack member except the management unit.

service timestamps

Add time stamps to debug and log messages. This command adds either the uptime or the current time and date.

Syntax service timestamps [debug | log] [datetime [localtime] [msec] [show-timezone] | uptime]

Parameters

debug	(OPTIONAL) Enter the keyword debug to add timestamps to debug messages.
log	(OPTIONAL) Enter the keyword log to add timestamps to log messages with severity 0 to 6.
datetime	(OPTIONAL) Enter the keyword datetime to have the current time and date added to the message.
localtime	(OPTIONAL) Enter the keyword localtime to include the localtime in the timestamp.
msec	(OPTIONAL) Enter the keyword msec to include milliseconds in the timestamp.
show-timezone	(OPTIONAL) Enter the keyword show-timezone to include the time zone information in the timestamp.
uptime	(OPTIONAL) Enter the keyword uptime to have the timestamp based on time elapsed since system reboot.

Defaults Not configured.

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information If you do not specify parameters and enter service timestamps, it appears as service timestamps debug uptime in the running-configuration.

Use the show running-config command to view the current options set for the service timestamps command.

show alarms

Displays the active major and minor alarms on the system.

Syntax show alarms

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 5-4. show alarms Command Example

```
FTOS# show alarms


--  Minor Alarms  --
Alarm Type                                              Duration
------------------------------------------------------------------------------
No minor alarms

--  Major Alarms  --
Alarm Type                                              Duration
------------------------------------------------------------------------------
No major alarms

FTOS#
```

show command-history

Displays a buffered log of all commands entered by all users along with a time stamp.

Syntax show command-history

Defaults None.

Command Mode EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information One trace log message is generated for each command. No password information is saved to this file.

Example

Figure 5-5. show command-history Command Example

```
FTOS#show command-history
[7/19 10:37:51]: CMD-(CLI):[enable]by default from console
[7/19 10:37:54]: CMD-(CLI):[show running-config snmp]by default from console
[7/19 14:44:39]: CMD-(CLI):[enable]by default from console
[7/19 14:44:40]: CMD-(CLI):[configure terminal]by default from console
         - Repeated 1 time.
[7/19 14:44:41]: CMD-(CLI):[snmp-server community public ro]by default from
console
[7/19 14:44:41]: CMD-(CLI):[logging 172.16.1.162]by default from console
[7/19 14:44:41]: CMD-(CLI):[logging 10.10.10.4]by default from console
[7/19 14:44:41]: CMD-(CLI):[logging 10.1.2.4]by default from console
[7/19 14:44:42]: CMD-(CLI):[logging 172.31.1.4]by default from console
[7/19 14:44:42]: CMD-(CLI):[logging 133.33.33.4]by default from console
[7/19 14:44:42]: CMD-(CLI):[management route 172.16.1.0 /24 10.11.209.4]by default
from console
[7/19 14:44:43]: CMD-(CLI):[service timestamps log datetime]by default from
console
[7/19 14:44:43]: CMD-(CLI):[line console 0]by default from console
[7/19 14:44:43]: CMD-(CLI):[exec-timeout 0]by default from console
[7/19 14:44:44]: CMD-(CLI):[exit]by default from console
[7/19 14:45:35]: CMD-(CLI):[configure]by default from console
         - Repeated 1 time.
[7/19 14:45:43]: CMD-(CLI):[protocol lldp]by default from console
[7/19 14:54:19]: CMD-(CLI):[exit]by default from console
[7/19 14:54:29]: CMD-(CLI):[show version]by default from console
[7/19 14:54:36]: CMD-(CLI):[configure]by default from console
         - Repeated 1 time.
[7/19 14:54:42]: CMD-(CLI):[protocol lldp]by default from console
[7/19 14:55:24]: CMD-(CLI):[exit]by default from console
[7/19 15:1:57]: CMD-(CLI):[interface tengigabitethernet 1/1]by default from
console
[7/19 15:4:7]: CMD-(CLI):[exit]by default from console
[7/19 15:8:12]: CMD-(CLI):[interface vlan 2]by default from console
[7/19 15:8:28]: CMD-(CLI):[interface managementethernet 0/0]by default from
console
--More--
FTOS#
```

Related Commands

clear command history	Clears the command history log.

show configuration lock

Displays the configuration lock status.

Syntax **show configuration lock**

Defaults None

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 5-6. show configuration lock Command Output

```
FTOS# show configuration lock

Configure exclusively locked by the following line:

Line              :  vty 0
Line number       :  2
User              :  admin
Type              :  AUTO
State             :  LOCKED
Ip address        :  10.11.9.97
```

Usage Information

The type may be auto, manual, or rollback. When set to auto, FTOS automatically denies access to CONFIGURATION mode to all other users every time the user on the listed VTY line enters CONFIGURATION mode. When set to manual, the user on the listed VTY line must explicitly set the lock each time before entering CONFIGURATION mode. Rollback indicates that FTOS is in a rollback process. The line number shown in the output can be used to send the messages to that session or release a lock on a VTY line.

show cpu-traffic-stats

Displays the CPU traffic statistics.

Syntax show cpu-traffic-stats [*port number* | all]

Parameters

port number	(OPTIONAL) Enter the port number to display traffic statistics on that port only. Range: 1 to 1568
all	(OPTIONAL) Enter the keyword all to display traffic statistics on all the interfaces receiving traffic, sorted based on traffic.

Defaults all

Command Modes EXEC

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 5-7. show cpu-traffic-stats Command Example

```
FTOS#show cpu-traffic-stats
Processor : CP
--------------
   Received 100% traffic on TenGigabitEthernet 8/2   Total packets:100
        LLC:0, SNAP:0, IP:100, ARP:0, other:0
        Unicast:100, Multicast:0, Broadcast:0

FTOS#
```

Usage Information

Traffic statistics are sorted on a per-interface basis; the interface receiving the most traffic is displayed first. All CPU and port information is displayed unless a specific port or CPU is specified. Traffic information is displayed for router ports only; not for management interfaces. The traffic statistics are collected only after the debug cpu-traffic-stats command is executed; not from the system bootup.

Note: After debugging is complete, use the no debug cpu-traffic-stats command to shut off traffic statistics collection.

Related Commands		
	debug cpu-traffic-stats	Enables CPU traffic statistics for debugging.

show debugging

Displays a list of all enabled debugging processes.

Syntax show debugging

Command Mode EXEC Privilege

Command History		
	Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 5-8. show debugging Command Example

```
FTOS#show debug
Generic IP:  (Access List: test)
  IP packet debugging is on for  (Access List: test)
     TenGigabitEthernet 0/16
  ICMP packet debugging is on for
     TenGigabitEthernet 0/16
OSPF:1
    OSPF packet debugging is on
DHCP:
  DHCP debugging is on
FTOS#
```

show diag

Displays the diagnostics information.

Syntax show diag {information | stack-unit number [detail | summary]] | testcase}

Parameters

information	Enter the keyword information to view current diagnostics information in the system.
stack-unit *unit-id*	(OPTIONAL) Enter the keyword stack-unit followed by the *unit-id* to display information on a specific stack member. Range: 0 to 5.
detail	(OPTIONAL) Enter the keyword detail to view detailed diagnostics information.
summary	(OPTIONAL) Enter the keyword summary to view a summary of the diagnostics information.
testcase	Enter the keyword testcase to view current diagnostics testcases available in the system.

Defaults Summary

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

show environment

Displays the system component status (for example, temperature, voltage).

Syntax show environment [all | stack-unit *unit-id*]

Parameters

all	(OPTIONAL) Enter the keyword all to view all components.
stack-unit *unit-id*	(OPTIONAL) Enter the keyword stack-unit followed by the *unit-id* to display information on a specific stack member. Range: 0 to 5.
thermal sensor	(OPTIONAL) Enter the keyword thermal-sensor to view all components.

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 5-9. show environment all Command Example

```
FTOS#show environment all

-- Unit Environment Status  --
Unit  Status        Temp   Voltage      TempStatus
------------------------------------------------------------------------
* 1   online        66C    ok            2

 * Management Unit

--  Thermal Sensor Readings (deg C)  --
Unit  Sensor0  Sensor1  Sensor2  Sensor3  Sensor4  Sensor5  Sensor6  Sensor7
Sensor8  Sensor9
------------------------------------------------------------------------------
---------------
  1      51      51      63      61      61      61      67      61      64
66

FTOS#
```

Example

Figure 5-10. show environment stack-unit Command Example

```
FTOS#show environment stack-unit

-- Unit Environment Status  --
Unit  Status        Temp   Voltage      TempStatus
------------------------------------------------------------------------
* 1   online        66C    ok            2

 * Management Unit

FTOS#
```

Example

Figure 5-11. show environment thermal-sensor Command Example

```
FTOS#show environment thermal-sensor

--  Thermal Sensor Readings (deg C)  --
Unit  Sensor0  Sensor1  Sensor2  Sensor3  Sensor4  Sensor5  Sensor6  Sensor7
Sensor8  Sensor9
-------------------------------------------------------------------------------
---------------
  1      51      51      64      61      61      61      67      61      64
66

FTOS#
```

show inventory

Displays the switch type, components (including media), FTOS version including hardware identification numbers and configured protocols.

Syntax show inventory {[media *slot*] | [optional-module]}

Parameters

media *slot*	(OPTIONAL) Enter the keyword media followed by the stack ID of the stack member for which you want to display pluggable media inventory.
optional-module	(OPTIONAL) Enter the keyword optional-module to display optional module information.

Defaults none

Command Modes EXEC

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage If there are no fibre ports in the unit, only the header under show inventory media is displayed. If there are fibre ports but no optics inserted, the output displays the message “Media not present or accessible.”

Example 1 **Figure 5-12. show inventory for M I/O Aggregator Command Example**

```
FTOS#show inventory
System Type            : I/O-Aggregator
System Mode            : 1.0
Software Version       : E8-3-17-38

Unit Type              Serial Number  Part Number  Rev  Piece Part ID
Rev  Svc Tag  Exprs Svc Code
--------------------------------------------------------------------------------
------------------------------
* 1  I/O-Aggregator    00000000000000 NVH81X01     01   00-NVH81X-00000-000-0000
01   N/A      N/A

 * - Management Unit


Software Protocol Configured
----------------------------------------------------------------
  DCBX
  Fip Snooping
  IGMP
  iSCSI
  LLDP
  SNMP

FTOS#
```

Example 2 **Figure 5-13. show inventory media Command Example**

```
FTOS#show inventory media
Slot Port Type  Media   SerialNumber  F10Qualifie
d
--------------------------------------------------------------------------------
   1     33              Media not present or accessible
   1     34              Media not present or accessible
   1     35              Media not present or accessible
   1     36              Media not present or accessible
   1     37     QSFP        40GBASE-CR4-1M      APF11380018VDU           Yes
   1     38     QSFP        40GBASE-CR4-1M      APF11380018VDU           Yes
   1     39     QSFP        40GBASE-CR4-1M      APF11380018VDU           Yes
   1     40     QSFP        40GBASE-CR4-1M      APF11380018VDU           Yes
   1     41              Media not present or accessible
   1     42     SFP         1000BASE-SX         P741L1X                  Yes
   1     43     SFP         100BASE-FX          PCK17RH                  Yes
   1     44     SFP         1000BASE-SX         PLP37JE                  Yes
   1     49     QSFP        40GBASE-CR4-1M      APF11380018VJ6           Yes
   1     50     QSFP        40GBASE-CR4-1M      APF11380018VJ6           Yes
   1     51     QSFP        40GBASE-CR4-1M      APF11380018VJ6           Yes
   1     52     QSFP        40GBASE-CR4-1M      APF11380018VJ6           Yes
   1     53     QSFP        40GBASE-CR4-1M      APF11380018VMP           Yes
   1     54     QSFP        40GBASE-CR4-1M      APF11380018VMP           Yes
   1     55     QSFP        40GBASE-CR4-1M      APF11380018VMP           Yes
   1     56     QSFP        40GBASE-CR4-1M      APF11380018VMP           Yes

FTOS#
```

Example 3 **Figure 5-14. show inventory media Command Example**

```
FTOS#show inventory optional-module
Unit  Slot    Expected     Inserted    Next Boot    Status/Power(On/Off)
--------------------------------------------------------------------------
   1     0        SFP+        SFP+          AUTO     Good/On
   1     1       QSFP+       QSFP+          AUTO     Good/On

 * - Mismatch

FTOS#
```

Related Commands

show config (from INTERFACE VLAN mode)	Displays information on a specific physical interface or virtual interface.

show memory

Displays current memory usage on the M I/O Aggregator.

Syntax show memory [stack-unit *0-5*]

Parameters

stack-unit *0-5*	(OPTIONAL) Enter the keyword stack-unit followed by the stack unit ID of the stack member to display memory information on the designated stack member.

Command Modes

EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

The output for the show memory command displays the memory usage of LP part (sysdlp) of the system. The Sysdlp is an aggregate task that handles all the tasks running on the CPU.

Example

Figure 5-15. show memory Command Example

```
FTOS#show memory stack-unit 0
     Statistics On Unit 0 Processor
     ==========================
   Total(b)      Used(b)       Free(b)      Lowest(b)      Largest(b)
   268435456       4010354     264425102    264375410    264425102
```

show processes cpu

Displays CPU usage information based on running processes.

Syntax show processes cpu [management-unit *1-99* [details] | stack-unit *0-5* | summary | ipc | memory [stack-unit *0-5*]]

Parameters

management-unit *1-99* [details]	(OPTIONAL) Displays processes running in the control processor. The *1-99* variable sets the number of tasks to be displayed in order of the highest CPU usage in the past five (5) seconds. Add the details keyword to display all running processes (except sysdlp). See Example 3.
stack-unit *0-5*	(OPTIONAL) Enter the keyword stack-unit followed by the stack member ID (Range 0 to 5). As an option of show processes cpu, this option displays CPU usage for the designated stack member. See Example 2. Or, as an option of memory, this option limits the output of memory statistics to the designated stack member. See Example 5.
summary	(OPTIONAL) Enter the keyword summary to view a summary view of CPU usage for all members of the stack. See Example 1.

ipc	(OPTIONAL) Enter the keyword ipc to display inter-process communication statistics.
memory	(OPTIONAL) Enter the keyword memory to display memory statistics. See Example 4.

Command Modes

EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example 1

Figure 5-16. show processes cpu summary Command Example

```
FTOS#show processes cpu summary

 CPU utilization        5Sec    1Min    5Min
 ------------------------------------------
 UNIT1                   4%      3%      2%
FTOS#
```

Example 2

Figure 5-17. show processes cpu management-unit Command Example

```
FTOS#show processes cpu management-unit 5

CPU utilization for five seconds: 4%/0%; one minute: 4%; five minutes: 4%
PID        Runtime(ms)    Invoked   uSecs     5Sec   1Min   5Min  TTY  Process
0x00000000        2120        212   10000    3.77%   3.77%    3.77%   0
                                                                       system
0x00000112     2472940     247294   10000    0.79%   0.61%    0.65%   0
                                                                       sysdlp
0x000000e4    495560      49556      10000   0.20%    0.25%      0.24%  0
                                                                       sysd
0x0000013d     34310      3431       10000   0.00%  0.02%       0.00%  0
                                                                       lacp
0x00000121         4190     419      10000    0.00%   0.02% 0.00%   0
                                                                       iscsiOpt
FTOS#
```

Example 3 **Figure 5-18. show processes cpu stack-unit Command Example**

```
FTOS#show process cpu stack-unit 1
PID        Runtime(ms)  Invoked    uSecs   5Sec   1Min   5Min  TTY Process
0x763a3000 17981680     1798168    10000   3.00%  2.67%  2.67%  0    KP
0x762ba000 0             0           0     0.00%  0.00%  0.00%  0 debugagt
0x762d9000 0             0           0     0.00%  0.00%  0.00%  0 F10StkMgr
0x762f8000 214590       21459      10000   0.00%  0.00%  0.00%  0 lcMgr
0x76319000 7890          789        10000  0.00%  0.00%  0.00%  0 dla
0x76344000 155770       15577       10000  0.00%  0.00%  0.02%  0 sysAdmTsk
0x76363000 583230       58323       10000  0.00%  0.00%  0.02% 0  timerMgr
0x76381000 658850        65885      10000  0.00%  0.17%  0.08% 0 PM
0x76299000 80110        8011        10000 0.00%  0.00%  0.00%  0 diagagt
0x763c3000 0             0           0    0.00%   0.00%  0.00% 0 evagt
--More--
```

Example 4

Figure 5-19. show processes memory Command Example

```
FTOS#show process memory

     Memory Statistics Of Stack Unit 1 (bytes)
     ============================================================
Total:  2147483648, MaxUsed:   499019776, CurrentUsed:  499019776, CurrentFree:
1648463872
    TaskName      TotalAllocated       TotalFreed       MaxHeld    CurrentHolding
    f10appioserv          225280                0             0           192512
       fcoecntrl          270336                0             0          9277440
    f10appioserv          225280                0             0           192512
        iscsiOpt          114688                0             0          7380992
        dhclient          552960                0             0          1626112
    f10appioserv          225280                0             0           192512
            ndpm          618496                0             0          7389184
    f10appioserv          225280                0             0           192512
            vrrp          335872                0             0          7712768
    f10appioserv          225280                0             0           192512
            frrp          180224                0             0          7192576
    f10appioserv          225280                0             0           192512
            xstp         2740224                0             0          9445376
    f10appioserv          225280                0             0           192512
             pim         1007616                0             0          7585792
    f10appioserv          225280                0             0           192512
            igmp          417792                0             0         14774272
    f10appioserv          225280                0             0           192512
            mrtm         5496832                0             0         12636160
    f10appioserv          225280                0             0           192512
           l2mgr         1040384                0             0         42471424
    f10appioserv          225280                0             0           192512
            l2pm          176128                0             0         24166400
    f10appioserv          225280                0             0           192512
            arpm          192512                0             0          6955008
    f10appioserv          225280                0             0           192512
             otm          184320                0             0          7127040
--More--
FTOS#
```

Example 5

Figure 5-20. show processes memory stack-unit Command Example

```
FTOS#show process memory stack-unit 1
Total:  2147483648, MaxUsed:   499040256, CurrentUsed:  499040256, CurrentFree:
1648443392
    TaskName      TotalAllocated       TotalFreed       MaxHeld    CurrentHolding
    f10appioserv          225280                0             0           192512
       fcoecntrl          270336                0             0          9277440
    f10appioserv          225280                0             0           192512
        iscsiOpt          114688                0             0          7380992
        dhclient          552960                0             0          1626112
    f10appioserv          225280                0             0           192512
            ndpm          618496                0             0          7389184
    f10appioserv          225280                0             0           192512
            vrrp          335872                0             0          7712768
    f10appioserv          225280                0             0           192512
            frrp          180224                0             0          7192576
    f10appioserv          225280                0             0           192512
            xstp         2740224                0             0          9445376
    f10appioserv          225280                0             0           192512
             pim         1007616                0             0          7585792
    f10appioserv          225280                0             0           192512
            igmp          417792                0             0         14774272
    f10appioserv          225280                0             0           192512
            mrtm         5496832                0             0         12636160
--More--
FTOS#
```

Related Commands

show diag	Displays the data plane or management plane input and output statistics of the designated component of the designated stack member.
show hardware system-flow	Displays Layer 3 ACL or QoS data for the selected stack member and stack member port-pipe.

show interfaces stack-unit	Displays information on all interfaces on a specific stack member.
show processes memory	Displays CPU usage information based on running processes

show processes ipc flow-control

Displays the Single window protocol queue (SWPQ) statistics.

Syntax show processes ipc flow-control [cp]

Parameters

cp	(OPTIONAL) Enter the keyword cp to view the Control Processor's SWPQ statistics.

Defaults none

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example 1

Figure 5-21. show processes ipc flow-control Command Example

```
FTOS#show process ipc flow-control

 Q Statistics on CP Processor
    TxProcess     RxProcess       Cur       High   Time   Retr       Msg       Ack  Aval   Max
                                  Len       Mark   Out    ies       Sent      Rcvd Retra Retra
         ACL0          RTM0         0          0      0      0          0         0    10    10
         ACL0     DIFFSERV0         0          0      0      0          0         0    10    10
         ACL0         IGMP0         0          0      0      0          0         0    10    10
         ACL0          PIM0         0          0      0      0          0         0    10    10
        LACP0        IFMGR0         0         24      0      0         34        34    25    25
         STP0         L2PM0         0          0      0      0          0         0    25    25
        L2PM0          STP0         0          1      0      0          2         2    25    25
        FRRP0         L2PM0         0          0      0      0          0         0    25    25
        DHCP0          ACL0         0          0      0      0          0         0    25    25
        DHCP0        IPMGR0         0          0      0      0          0         0    25    25
        DHCP0        IFMGR0         0          0      0      0          0         0    25    25
        SMUX0        IFMGR0         0         38      0      0         47        47    60    60
        SMUX0         LACP0         0          1      0      0          3         3    60    60
--More--
FTOS#
```

Table 5-1 lists the definitions of the fields shown in Figure 5-21.

Table 5-1. Description of the show processes ipc flow-control cp output Command

Field	Description
Source QID /Tx Process	Source Service Identifier
Destination QID/Rx Process	Destination Service Identifier
Cur Len	Current number of messages enqueued

Table 5-1. Description of the show processes ipc flow-control cp output Command

Field	Description
High Mark	Highest number of packets in the queue at any point of time
#of to / Timeout	Timeout count
#of Retr /Retries	Number of retransmissions
#msg Sent/Msg Sent/	Number of messages sent
#msg Ackd/Ack Rcvd	Number of messages acknowledged
Retr /Available Retra	Number of retries left
Total/ Max Retra	Number of retries allowed

Usage Information

The Single window protocol (SWP) provides flow control-based reliable communication between the sending and receiving software tasks.

Important Points to Remember

- A sending task enqueues messages into the SWP queue3 for a receiving task and waits for an acknowledgement.
- If no response is received within a defined period of time, the SWP timeout mechanism resubmits the message at the head of the FIFO queue.
- After retrying a defined number of times, the following timeout message is generated:

  SWP-2-NOMORETIMEOUT
- In the display output in Figure 5-21, a retry (Retries) value of zero indicates that the SWP mechanism reached the maximum number of retransmissions without an acknowledgement.

show processes memory

Displays memory usage information based on processes running in the system.

Syntax

show processes memory {management-unit | stack unit {*0–5* | all | summary}}

Parameters

management-unit	Enter the keyword management-unit for CPU memory usage of the stack management unit.
stack unit *0–5*	Enter the keyword stack unit followed by a stack unit ID of the member unit for which to display memory usage on the forwarding processor.
all	Enter the keyword all for detailed memory usage on all stack members.
summary	Enter the keyword summary for a brief summary of memory availability and usage on all stack members.

Command Modes

EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

The output for the show process memory command displays the memory usage statistics running on CP part (sysd) of the system. The Sysd is an aggregate task that handles all the tasks running on M I/O Aggregator's CP.

The output of show memory and this command will differ based on which FTOS processes are counted.

- In the show memory display output, the memory size is equal to the size of the application processes.
- In the output of this command, the memory size is equal to the size of the application processes *plus* the size of the system processes.

Example

Figure 5-22. show processes memory Command Example

```
FTOS#show process memory stack-unit 1
Total:  2147483648, MaxUsed:   499040256, CurrentUsed:  499040256, CurrentFree:
1648443392
    TaskName      TotalAllocated       TotalFreed       MaxHeld    CurrentHolding
    f10appioserv          225280                0             0           192512
       fcoecntrl          270336                0             0          9277440
    f10appioserv          225280                0             0           192512
        iscsiOpt          114688                0             0          7380992
        dhclient          552960                0             0          1626112
    f10appioserv          225280                0             0           192512
            ndpm          618496                0             0          7389184
    f10appioserv          225280                0             0           192512
            vrrp          335872                0             0          7712768
    f10appioserv          225280                0             0           192512
            frrp          180224                0             0          7192576
    f10appioserv          225280                0             0           192512
            xstp         2740224                0             0          9445376
    f10appioserv          225280                0             0           192512
             pim         1007616                0             0          7585792
    f10appioserv          225280                0             0           192512
            igmp          417792                0             0         14774272
    f10appioserv          225280                0             0           192512
            mrtm         5496832                0             0         12636160
--More--
```

Example

Figure 5-23. show processes memory management-unit Command Example

```
FTOS#show processes memory management-unit
Total      :  2147483648, MaxUsed    :   499093504 [07/23/2012 17:42:16]
CurrentUsed:   499093504, CurrentFree:  1648390144
SharedUsed :    18470440, SharedFree :     2501104

 PID   Process           ResSize      Size      Allocs      Frees       Max
Current
 633 fcoecntrl          9277440     270336    1380528     132512    1281144
1248016
 289 iscsiOpt           7380992     114688      23262      16564      23262
6698
 476 dhclient           1626112     552960          0          0          0
0
 521 ndpm               7389184     618496       4848          0       4848
4848
 160 vrrp               7712768     335872        880          0        880
880
 318 frrp               7192576     180224      71086      66256      21394
4830
 218 xstp               9445376    2740224      21858          0      21858
21858
 277 pim                7585792    1007616      62168          0      62168
62168
--More--
```

Table 5-2 defines the fields that appear in the show processes memory output.

Table 5-2. Descriptions of show processes memory output

Field	Description
Total:	Total system memory available
MaxUsed:	Total maximum memory used ever (history indicated with time stamp)
CurrentUsed:	Total memory currently in use
CurrentFree:	Total system memory available
SharedUsed:	Total used shared memory
SharedFree:	Total free shared memory
PID	Process ID
Process	Process Name
ResSize	Actual resident size of the process in memory
Size	Process test, stack, and data size
Allocs	Total dynamic memory allocated
Frees	Total dynamic memory freed
Max	Maximum dynamic memory allocated
Current	Current dynamic memory in use

show server-interfaces

Displays server port information.

Syntax show server-interfaces {brief | detail}

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example **Figure 5-24. show server-interfaces brief Command Example**

```
FTOS#show server-interfaces brief
 ---------------- show server ports brief ---------------------

Interface                OK  Status     Protocol    Description
TenGigabitEthernet 1/1   NO  up         down
TenGigabitEthernet 1/2   NO  up         down
TenGigabitEthernet 1/3   NO  up         down
TenGigabitEthernet 1/4   NO  up         down
TenGigabitEthernet 1/5   YES up         up
TenGigabitEthernet 1/6   NO  up         down
TenGigabitEthernet 1/7   NO  up         down
TenGigabitEthernet 1/8   NO  up         down
TenGigabitEthernet 1/9   NO  up         down
TenGigabitEthernet 1/10  NO  up         down
TenGigabitEthernet 1/11  NO  up         down
TenGigabitEthernet 1/12  NO  up         down
TenGigabitEthernet 1/13  YES up         up
TenGigabitEthernet 1/14  NO  up         down
TenGigabitEthernet 1/15  NO  up         down
TenGigabitEthernet 1/16  YES up         up
--More--
FTOS#
```

Example **Figure 5-25. show server-interfaces detail Command Example**

```
FTOS#show server-interfaces detail

 ---------------- show server ports detail ---------------------

TenGigabitEthernet 0/1 is up, line protocol is down(error-disabled[UFD])
Hardware is DellForce10Eth, address is 00:1e:c9:f1:00:99
    Current address is 00:1e:c9:f1:00:99
Server Port AdminState is N/A
Pluggable media not present
Interface index is 34149121
Internet address is not set
Mode of IP Address Assignment : NONE
DHCP Client-ID :tenG130001ec9f10099
MTU 12000 bytes, IP MTU 11982 bytes
LineSpeed auto
Flowcontrol rx on tx off
ARP type: ARPA, ARP Timeout 04:00:00
Last clearing of "show interface" counters 00:59:19
Queueing strategy: fifo
Input Statistics:
     0 packets, 0 bytes
     0 64-byte pkts, 0 over 64-byte pkts, 0 over 127-byte pkts
     0 over 255-byte pkts, 0 over 511-byte pkts, 0 over 1023-byte pkts
     0 Multicasts, 0 Broadcasts
     0 runts, 0 giants, 0 throttles
     0 CRC, 0 overrun, 0 discarded
Output Statistics:
     0 packets, 0 bytes, 0 underruns
     0 64-byte pkts, 0 over 64-byte pkts, 0 over 127-byte pkts
     0 over 255-byte pkts, 0 over 511-byte pkts, 0 over 1023-byte pkts
     0 Multicasts, 0 Broadcasts, 0 Unicasts
     0 throttles, 0 discarded, 0 collisions, 0 wreddrops
Rate info (interval 299 seconds):
     Input 00.00 Mbits/sec,          0 packets/sec, 0.00% of line-rate
     Output 00.00 Mbits/sec,          0 packets/sec, 0.00% of line-rate
Time since last interface status change: 00:58:08

TenGigabitEthernet 0/2 is up, line protocol is down(error-disabled[UFD])
Hardware is DellForce10Eth, address is 00:1e:c9:f1:00:99
    Current address is 00:1e:c9:f1:00:99
Server Port AdminState is N/A
Pluggable media not present
Interface index is 34411265
Internet address is not set
Mode of IP Address Assignment : NONE
DHCP Client-ID :tenG131001ec9f10099
--More--
```

show system

Displays the current status of all stack members or a specific stack member.

Syntax

show system [brief | stack-unit *unit-id*]

Parameters

brief	(OPTIONAL) Enter the keyword brief to view an abbreviated list of system information.
stack-unit *unit-id*	(OPTIONAL) Enter the keyword stack-unit followed by the stack member ID for information on that stack member. Range: 0 to 5.

Command Modes

EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage

Figure 5-26 shows the output from the show system brief command.
Figure 5-27 shows the output from the show system stack-unit command.

Example

Figure 5-26. show system brief Command Example

```
FTOS#show system brief

Stack MAC : 00:01:e8:00:ab:03

--  Stack Info  --
Unit  UnitType     Status        ReqTyp         CurTyp         Version     Ports
-------------------------------------------------------------------------------
----
  0   Member       not present
  1   Management   online         I/O-Aggregator  I/O-Aggregator  8-3-17-38   56
  2   Member       not present
  3   Member       not present
  4   Member       not present
  5   Member       not present

FTOS#
```

Example

Figure 5-27. show system stack-unit Command Example

```
FTOS#show system stack-unit 1

--  Unit 1 --
Unit Type       : Management Unit
Status          : online
Next Boot       : online
Required Type   : I/O-Aggregator - 34-port GE/TE (XL)
Current Type    : I/O-Aggregator - 34-port GE/TE (XL)
Master priority : 0
Hardware Rev    : 01
Num Ports       : 56
Up Time         : 4 day, 7 hr, 9 min
FTOS Version    : 8-3-17-38
Jumbo Capable   : yes
POE Capable     : no
Boot Flash      : A: 4.0.1.0bt [booted]    B: 4.0.1.0bt1
Boot Selector   : 4.0.0.0bt
Memory Size     : 2147483648 bytes
Temperature     : 67C
Voltage         : ok
Switch Power    : GOOD
Product Name    : I/O Aggregator
Mfg By          : DELL
Mfg Date        :
Serial Number   : 00000000000000
Part Number     : NVH81X01
Piece Part ID   : 00-NVH81X-00000-000-0000
PPID Revision   : 01
Service Tag     : N/A
Expr Svc Code   : N/A
PSOC FW Rev     : 0xb
ICT Test Date   : 0-0-0
ICT Test Info   : 0x0
Max Power Req   : 31488
Fabric Type     : 0x3
Fabric Maj Ver  : 0x1
Fabric Min Ver  : 0x0
SW Manageability: 0x4
HW Manageability: 0x1
Max Boot Time   : 3 minutes
Link Tuning     : unsupported
Auto Reboot     : enabled
Burned In MAC   : 00:01:e8:00:ab:03
No Of MACs      : 3

FTOS#
```

Related Commands

show version	Displays the FTOS version.
show processes memory	Displays the memory usage based on the running processes.
show system stack-ports	Displays information about the stack ports on all switches in the stack.
show diag	Displays the data plane and management plane input and output statistics of a particular stack member.

show revision

Displays the revision numbers of all stack-units.

Syntax show revision

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 5-28. show alarms Command Example

```
FTOS#show revision

--  Stack unit 1 --
IOM SYSTEM CPLD         : 1

FTOS#
```

show tech-support

Displays a collection of data from other show commands, necessary for Dell Force10 technical support to perform troubleshooting on M I/O Aggregators.

Syntax show tech-support [stack-unit *unit-id* | page]

Parameters

stack-unit	(OPTIONAL) Enter the keyword stack-unit to view CPU memory usage for the stack member designated by *unit-id*. Range: 0 to 5
page	(OPTIONAL) Enter the keyword page to view 24 lines of text at a time. Press the SPACE BAR to view the next 24 lines. Press the ENTER key to view the next line of text.
	When using the pipe command (|), enter one of these keywords to filter command output. Refer to Chapter 3, CLI Basics for details on filtering commands.
save	Enter the save keyword to save the command output. flash: Save to local flash drive (flash://filename (max 20 chars))

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Examples

Figure 5-29. show tech-support save Command Example (Partial)

```
FTOS#show tech-support ?
page                   Page through output
stack-unit             Unit Number
|                      Pipe through a command
<cr>
FTOS#show tech-support stack-unit 1 ?
page                   Page through output
|                      Pipe through a command
<cr>
FTOS#show tech-support stack-unit 1 | ?
except                 Show only text that does not match a pattern
find                   Search for the first occurrence of a pattern
grep                   Show only text that matches a pattern
no-more                Don't paginate output
save                   Save output to a file

FTOS#show tech-support stack-unit 1 | save ?
flash:                Save to local file system (flash://filename (max 20 chars) )
usbflash:              Save to local file system (usbflash://filename (max 20
chars) )
FTOS#show tech-support stack-unit 1 | save flash://LauraSave
Start saving show command report .......
FTOS#

FTOS#dir
Directory of flash:

Directory of flash:

  1  drwx       4096   Jan 01 1980 01:00:00 +01:00 .
  2  drwx       2048   May 16 2012 10:49:01 +01:00 ..
  3  drwx       4096   Jan 24 2012 19:38:32 +01:00 TRACE_LOG_DIR
  4  drwx       4096   Jan 24 2012 19:38:32 +01:00 CORE_DUMP_DIR
  5  d---       4096   Jan 24 2012 19:38:34 +01:00 ADMIN_DIR
  6  -rwx      10303   Mar 15 2012 18:37:20 +01:00 startup-config.bak
  7  -rwx       7366   Apr 20 2012 10:57:02 +01:00 startup-config
  8  -rwx          4   Feb 19 2012 07:05:02 +01:00 dhcpBindConflict
  9  -rwx      12829   Feb 18 2012 02:24:14 +01:00 startup-config.backup
 10  drwx       4096   Mar 08 2012 22:58:54 +01:00 WJ_running-config
 11  -rwx       7689   Feb 21 2012 04:45:40 +01:00 stbkup

flash: 2143281152 bytes total (2131476480 bytes free)

FTOS#
```

Figure 5-30. show tech-support Command Example (Partial)

```
FTOS#show tech-support stack-unit 1

 ---------------------------------- show version ------------------------------
Dell Force10 Real Time Operating System Software
Dell Force10 Operating System Version: 1.0
Dell Force10 Application Software Version: E8-3-17-38
Copyright (c) 1999-2012 by Dell Inc. All Rights Reserved.
Build Time: Thu Jul 19 05:59:59 PDT 2012
Build Path: /sites/sjc/work/swsystems01-2/ravisubramani/ravis-8317/SW/SRC/Cp_src/
Tacacs
FTOS uptime is 4 day(s), 7 hour(s), 14 minute(s)

System image file is "dv-m1000e-2-b2"

System Type: I/O-Aggregator
Control Processor: MIPS RMI XLP with 2147483648 bytes of memory.

256M bytes of boot flash memory.

  1 34-port GE/TE (XL)
 56 Ten GigabitEthernet/IEEE 802.3 interface(s)

---------------------------------- show clock -------------------------------
17:49:37.2 UTC Mon Jul 23 2012

 ---------------------------------- show running-config ----------------------
Current Configuration ...
! Version E8-3-17-38
! Last configuration change at Mon Jul 23 17:10:18 2012 by default
!
boot system stack-unit 1 primary tftp://10.11.9.21/dv-m1000e-2-b2
boot system stack-unit 1 default system: A:
boot system gateway 10.11.209.62
!
redundancy auto-synchronize full
!
service timestamps log datetime
!
hostname FTOS

 ---------------------------------- show ip management route ------------------

Destination        Gateway                       State
-----------        -------                       -----
1
--More--
FTOS#
```

Usage Information

Without the page or stack-unit option, the command output is continuous, use **Ctrl-z** to interrupt the command output.

The save option works with other filtering commands. This allows you to save specific information of a show command. The save entry must always be the last option.

For example: FTOS#*show tech-support* |grep *regular-expression* |except *regular-expression* | find *regular-expression* | *save flash://result*

This display output is an accumulation of the same information that is displayed when you execute one of the following show commands:

- show cam
- show clock
- show environment
- show file
- show interfaces
- show inventory

- show processes cpu
- show processes memory
- show running-conf
- show version

Related Commands

show version	Displays the FTOS version.
show system	Displays the current switch status.
show environment	Displays system component status.
show processes memory	Displays memory usage based on the running processes.

show uplink brief

Displays the uplink port information.

Syntax show uplink {brief | detail}

Parameters

brief	Enter the keyword brief to display a brief summary of the uplink port information.
detail	Enter the keyword detail to display uplink port information with description.

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example 1

Figure 5-31. show uplink brief Command Example

```
FTOS#show uplink brief

---------------- show uplink brief ---------------------

Interface                OK  Status     Protocol    Description
TenGigabitEthernet 0/41  NO  up         down
TenGigabitEthernet 0/42  NO  up         down
TenGigabitEthernet 0/43  NO  up         down
TenGigabitEthernet 0/44  NO  up         down
TenGigabitEthernet 0/45  NO  up         down
TenGigabitEthernet 0/46  NO  up         down
TenGigabitEthernet 0/47  NO  up         down
TenGigabitEthernet 0/48  NO  up         down
TenGigabitEthernet 0/49  NO  up         down
TenGigabitEthernet 0/50  NO  up         down
TenGigabitEthernet 0/51  NO  up         down
TenGigabitEthernet 0/52  NO  up         down
TenGigabitEthernet 0/53  NO  up         down
TenGigabitEthernet 0/54  NO  up         down
TenGigabitEthernet 0/55  NO  up         down
TenGigabitEthernet 0/56  NO  up         down
TenGigabitEthernet 1/41  NO  up         down
TenGigabitEthernet 1/42  NO  up         down
TenGigabitEthernet 1/43  NO  up         down
--More--
4  www.force10networks.com (10.11.84.18) 000.000 ms  000.000 ms  000.000 ms
FTOS#
```

Example 2 **Figure 5-32. show uplink detail Command Example**

```
FTOS#show uplink detail

---------------- show uplink detail ---------------------

TenGigabitEthernet 0/41 is up, line protocol is down
Hardware is DellForce10Eth, address is 00:1e:c9:f1:00:99
    Current address is 00:1e:c9:f1:00:99
Port is not prsent
Pluggable media not present
Interface index is 44634881
Internet address is not set
Mode of IP Address Assignment : NONE
DHCP Client-ID :tenG170001ec9f10099
MTU 12000 bytes, IP MTU 11982 bytes
LineSpeed auto
Flowcontrol rx on tx off
ARP type: ARPA, ARP Timeout 04:00:00
Last clearing of "show interface" counters 2d19h53m
Queueing strategy: fifo
Input Statistics:
     0 packets, 0 bytes
     0 64-byte pkts, 0 over 64-byte pkts, 0 over 127-byte pkts
     0 over 255-byte pkts, 0 over 511-byte pkts, 0 over 1023-byte pkts
     0 Multicasts, 0 Broadcasts
--More--
```

show util-threshold cpu

Displays the set CPU utilization threshold values.

Syntax show util-threshold cpu

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information This command displays all CPU utilization thresholds of the management, standby, and stack-units.

show util-threshold memory

Displays the set memory utilization threshold values.

Syntax show util-threshold memory

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information This command displays all memory utilization thresholds of the management, standby, and stack-units.

ssh-peer-stack-unit

Open an SSH connection to the peer stack-unit.

Syntax ssh-peer-stack-unit [-l username]

Parameters

-l *username*	(OPTIONAL) Enter the keyword **-l** followed by your username. Default: The username associated with the terminal.

Defaults Not configured.

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

telnet

Connect through Telnet to a server. The Telnet client and server in FTOS supports IPv4 connections. You can establish a Telnet session directly to the router, or a connection can be initiated from the router.

Syntax telnet {*host* | *ip-address*} [/source-interface]

Parameters

host	Enter the name of a server.
ip-address	Enter the IPv4 address in dotted decimal format of the server.
/source-interface	(OPTIONAL) Enter the keywords /source-interface followed by the interface information to include the interface's IP address. Enter the following keywords and slot/port or number information: • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information. • For a VLAN interface, enter the keyword vlan followed by a number from 1 to 4094.

Defaults Not configured.

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information Telnet to link-local addresses is not supported.

telnet-peer-stack-unit

Open a telnet connection to the peer stack-unit.

Syntax telnet-peer-stack-unit

Defaults Not Configured

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

terminal length

Configure the number of lines displayed on the terminal screen.

Syntax terminal length *screen-length*

To return to the default values, use the no terminal length command.

Parameters

screen-length	Enter a number of lines. Entering zero will cause the terminal to display without pausing. Range: 0 to 512. Default: 24 lines.

Defaults 24 lines

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

terminal xml

Enable XML mode in Telnet and SSH client sessions.

Syntax terminal xml

To exit the XML mode, use the no terminal xml command.

Defaults Disabled

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

This command enables XML input mode where you can either cut and paste XML requests or enter the XML requests line-by-line.

terminal monitor

Configure the FTOS to display messages on the monitor/terminal.

Syntax

terminal monitor

To return to default settings, use the no terminal monitor command.

Defaults

Disabled.

Command Modes

EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

traceroute

View the packet path to a specific device.

Syntax

traceroute {*host* | *ip-address*}

Parameters

host	Enter the name of device.
ip-address	Enter the IP address of the device in dotted decimal format.

Defaults

Timeout = 5 seconds; Probe count = 3; 30 hops max; 40 byte packet size; UDP port = 33434

Command Modes

EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

When you enter the traceroute command without specifying an IP address (Extended Traceroute), you are prompted for a target and source IP address, timeout in seconds (default is 5), a probe count (default is 3), minimum TTL (default is 1), maximum TTL (default is 30), and port number (default is 33434). To keep the default setting for those parameters, press the ENTER key.

Example

Figure 5-33. traceroute (IPv4) Command Example

```
FTOS#traceroute www.force10networks.com

Translating "www.force10networks.com"...domain server (10.11.0.1) [OK]
Type Ctrl-C to abort.

------------------------------------------------------------------------------
---------
Tracing the route to www.force10networks.com (10.11.84.18), 30 hops max, 40 byte
packets
------------------------------------------------------------------------------
---------

 TTL Hostname            Probe1      Probe2      Probe3
  1  10.11.199.190        001.000 ms  001.000 ms  002.000 ms
  2  gwegress-sjc-02.force10networks.com (10.11.30.126) 005.000 ms  001.000 ms
001.000 ms
  3  fw-sjc-01.force10networks.com (10.11.127.254) 000.000 ms  000.000 ms  000.000
ms
  4  www.force10networks.com (10.11.84.18) 000.000 ms  000.000 ms  000.000 ms
FTOS#
```

Related Commands

ping	Tests the connectivity to a device.

undebug all

Disable all debug operations on the system.

Syntax undebug all

Defaults none

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

write

Copy the current configuration to either the startup-configuration file or the terminal.

Syntax write {memory | terminal}

Parameters

memory	Enter the keyword memory to copy the current running configuration to the startup configuration file. This command is similar to the copy running-config startup-config command.
terminal	Enter the keyword terminal to copy the current running configuration to the terminal. This command is similar to the show running-config command.

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

The write memory command saves the running-configuration to the file labeled startup-configuration. When using a LOCAL CONFIG FILE other than the startup-config not named “startup-configuration”, the running-config is not saved to that file; use the copy command to save any running-configuration changes to that local file.

6

u-Boot

Overview

All commands in this chapter are in u-Boot mode. These commands are supported on the Dell Force10 Aggregator only.

To access this mode, hit any key when the following line appears on the console during a system boot:

```
Hit any key to stop autoboot:
```

You enter u-Boot immediately, as indicated by the `BOOT_USER#` prompt.

Note: Only the most frequently used commands available in uBoot mode are described in this chapter.

In uBoot mode, you cannot use the Tab key for command completion.

Commands

- boot change
- boot selection
- boot show net config retries
- boot write net config retries
- boot zero
- default gateway
- enable
- help
- ignore enable password
- ignore startup-config
- interface management ethernet ip address
- no default gateway
- no interface management ethernet ip address
- reload
- show boot blc
- show boot selection
- show bootflash
- show bootvar
- show default gateway
- show interface management ethernet

- show interface management port config
- syntax help

Note: You cannot use the Tab key to complete commands in this mode.

boot change

Change the operating system boot parameters.

Syntax **boot change** [primary | secondary | default]

Command Modes uBoot

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

boot selection

Change the ROM bootstrap bootflash partition.

Syntax **boot selection** [a | b]

Command Modes uBoot

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

boot show net config retries

Show the number of retries for network boot configuration failure.

Syntax **boot show net config retries**

Command Modes uBoot

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example **Figure 6-1.** boot show net config retries Command Example

```
BOOT_USER# boot show net config retries
Number of Network Boot Config Retries is : 0
BOOT_USER #
```

boot write net config retries

Set the number of retries for network boot configuration failure.

Syntax **boot write net config retries** <int>

Command Modes uBoot

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example **Figure 6-2.** boot write net config retries Command Example

```
BOOT_USER # boot write net config retries 2
Updated number of Network Boot Config retries to 2.
BOOT_USER #
```

boot zero

Clears the primary, secondary, or default boot parameters.

Syntax **boot zero** [primary | secondary | default]

Command Modes uBoot

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

default gateway

Set the default gateway IP address.

Syntax **default-gateway** <ip-address>

Command Modes uBoot

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

enable

Change the access privilege level.

Syntax **enable** [user | admin]

Command Modes uBoot

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

help

Displays the help menu.

Syntax **help**

Command Modes uBoot

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example **Figure 6-3.** help Command Example

```
BOOT_USER # help
***** Dell Force10 Boot Interface Help Information *****
Current access level: USER LEVEL
Use "syntax help" for more information on syntax.
Available command list (22 commands total):
  boot change [primary|secondary|default]
      change operating system boot parameters
  boot selection [a|b]
      change the rom bootstrap bootflash partition
  boot show net config retries
      show number of retries for network boot config failure
  boot write net config retries <int>
      write number of retries for network boot config failure
  boot zero [primary|secondary|default]
      zero operating system boot parameters
  default-gateway <ip-address>
      default-gateway - set the default gateway ip address
  enable [user|admin]
      change access privilege level
  help
      display help menu
-(36%)-Use <CR> to continue, q to stop:
BOOT_USER #
```

ignore enable password

Ignore the enabled password.

Syntax **ignore enable-password**

Command Modes uBoot

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

ignore startup-config

Ignore the system startup configuration.

Syntax **ignore startup-config**

Command Modes uBoot

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

interface management ethernet ip address

Set the management port IP address and mask.

Syntax **interface management ethernet ip address** <ip/mask>

Command Modes uBoot

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

no default gateway

Clear the default gateway IP address.

Syntax **no default-gateway**

Command Modes uBoot

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

no interface management ethernet ip address

Clear the management port IP address and mask.

Syntax **no interface management ethernet ip address**

Command Modes uBoot

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

reload

Reload the M I/O Aggregator.

Syntax **reload**

Command Modes uBoot

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

show boot blc

Show the boot loop counter value.

Syntax **show boot blc**

Command Modes uBoot

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example **Figure 6-4.** show boot blc Command Example

```
BOOT_USER # show boot blc ?
Total 1 possible command found.
Possible command list:
  show boot blc
       show the boot loop counter value
BOOT_USER # show boot blc
Boot Loop Counter : 10

BOOT_USER #
```

show boot selection

Displays the ROM bootstrap bootflash partition.

Syntax **show boot selection**

Command Modes uBoot

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example **Figure 6-5.** show boot selection Command Example

```
BOOT_USER # show boot selection

ROM BOOTSTRAP SELECTOR PARMETERS:
================================
Next ROM bootstrap set to occur from Bootflash partition A.

Last ROM bootstrap occurred from Bootflash partition B.

BOOT_USER #
```

show bootflash

Show the summary of boot flash information.

Syntax **show bootflash**

Command Modes uBoot

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 6-6. show bootflash Command Example

```
BOOT_USER # show bootflash

GENERAL BOOTFLASH INFO
======================
Bootflash Partition A:
  Dell Force10 Networks System Boot
  Official IOM_LP_IMG_BOOT_LOADER, BSP Release 4.0.1.0bt1
  Created Tue May  1 10:56:16 2012 by build on login-sjc-01

Bootflash Partition B:
  Dell Force10 Networks System Boot
  Official IOM_LP_IMG_BOOT_LOADER, BSP Release 4.0.1.0bt1
  Created Tue May  1 10:56:16 2012 by build on login-sjc-01

Boot Selector Partition:
  Dell Force10 Networks System Boot
  Official IOM_XLOAD_LP_IMG_BOOT_SELECTOR, BSP Release 4.0.0.0bt1
  Created Tue May  1 10:56:34 2012 by build on login-sjc-01

BOOT_USER #
```

show bootvar

Show the summary of operating system boot parameters.

Syntax **show bootvar**

Command Modes uBoot

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example **Figure 6-7.** show bootvar Command Example

```
BOOT_USER # show bootvar

PRIMARY OPERATING SYSTEM BOOT PARAMETERS:
=========================================
boot device                          : tftp
file name                            : premnath
Management Etherenet IP address      : 10.16.130.134/16
Server IP address                    : 10.16.127.35
Default Gateway IP address           : 15.0.0.1
Management Etherenet MAC address     : 00:01:E8:43:DE:DF

SECONDARY OPERATING SYSTEM BOOT PARAMETERS:
===========================================
No Operating System boot parameters specified!

DEFAULT OPERATING SYSTEM BOOT PARAMETERS:
=========================================
boot device                          : tftp
file name                            : FTOS-XL-8-3-16-99.bin
Management Etherenet IP address      : 10.16.130.134/16
Server IP address                    : 10.16.127.53
Default Gateway IP address           : 15.0.0.1
Management Etherenet MAC address     : 00:01:E8:43:DE:DF

BOOT_USER #
```

show default gateway

Displays the default gateway IP address.

Syntax **show default-gateway**

Command Modes uBoot

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example **Figure 6-8.** show default-gateway Command Example

```
BOOT_USER # show default-gateway

Gateway IP address: 15.0.0.1

BOOT_USER #
```

show interface management ethernet

Show the management port IP address and mask.

Syntax **show interface management ethernet**

Command Modes uBoot

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 6-9. show interface management ethernet Command Example

```
BOOT_USER # show interface management ethernet
Management ethernet IP address: 10.16.130.134/16

BOOT_USER #
```

show interface management port config

Show the management port boot characteristics.

Syntax **show interface management port config**

Command Modes uBoot

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 6-10. show interface management port config Command Example

```
BOOT_USER # show interface management port config
Management ethernet Port Configuration: no Auto Negotiate
Management ethernet Port Configuration: 100M
Management ethernet Port Configuration: full duplex
BOOT_USER #
```

syntax help

Show the syntax information.

Syntax **help**

Command Modes uBoot

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

7

Data Center Bridging

Overview

Data center bridging (DCB) refers to a set of IEEE Ethernet enhancements that provide data centers with a single, robust, converged network to support multiple traffic types, including LAN, server, and storage traffic.

The Dell Force10 operating software (FTOS) commands for data center bridging features include 802.1Qbb priority-based flow control (PFC), 802.1Qaz enhanced transmission selection (ETS), and the Data Center Bridging Exchange (DCBX) protocol. CLI commands for individual DCB features are as follows:

DCB Command

- dcb enable
- dcb enable on-next-reload

PFC Commands

- clear pfc counters
- show interface pfc
- show interface pfc statistics
- show stack-unit stack-ports pfc detail

ETS Commands

- clear ets counters
- show interface ets
- show stack-unit stack-ports ets detail

DCBX Commands

- show dcb
- show interface dcbx detail

clear ets counters

Clear ETS TLV counters.

Syntax clear ets counters [tengigabitethernet *slot/port*]

Parameters

slot/port	Enter the slot/port number.

Defaults None

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

clear pfc counters

Clear PFC TLV counters.

Syntax clear pfc counters [stack-unit *unit-number* | tengigabitethernet *slot/port*]

Parameters

unit number <0-5>	Number of the member stack unit. Valid values: 0 to 5. Default: 0
slot/port	Enter the slot/port number.

Defaults None

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

dcb enable

Re-enable DCB.

Syntax dcb enable

To disable DCB, use the no dcb enable command.

Defaults None

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information The Aggregator is autoconfigured to use DCB. In some network topologies, you may want to disable DCB and allow link-level flow control to control data transmission between the Aggregator and other network devices.

dcb enable on-next-reload

Enables global DCB on a subsequent reload. This command also internally configures PFC buffers based on DCB enable/disable. Save and reload is mandatory for the configurations to take effect.

Syntax dcb enable on-next-reload

To disable global DCB on a subsequent reload, use the no dcb enable on-next-reload command.

Defaults None

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example 1 **Figure 7-1. dcb enable on-next-reload Command Example**

```
FTOS#
FTOS#show dcb stack-unit 0 port-set 0

stack-unit 0 port-set 0
    DCB Status : Disabled
PFC Port Count :  0  (current), 0  (configured)
PFC Queue Count :  0  (current), 0  (configured)
FTOS#
FTOS#
FTOS#conf t
FTOS(conf)#dcb enable on-next-reload
FTOS(conf)#00:02:35: %STKUNIT0-M:CP %DIFFSERV-6-DCB_ENABLE_CFG_ON_RELOAD:
Global DCB will be enabled on subsequent reload, PFC buffers will be reserved
for all pfc ports and max loss less queues supported for each stack unit. For
the pfc-buffering change to take effect, please save the config and reload the
system.

FTOS(conf)#end
FTOS#00:02:38: %STKUNIT0-M:CP %SYS-5-CONFIG_I: Configured from  console

FTOS#write memory
00:02:41: %STKUNIT0-M:CP %FILEMGR-5-FILESAVED: Copied running-config to
startup-config in flash by default


FTOS#reload

Proceed with reload [confirm yes/no]: yes
syncing disks... done
unmounting file systems...
unmounting /f10/flash (/dev/ld0e)...
unmounting /usr (mfs:31)...
unmounting /lib (mfs:23)...
unmounting /f10 (mfs:20)...
unmounting /tmp (mfs:15)...
unmounting /kern (kernfs)...
unmounting / (/dev/md0a)... done
rebooting...

FTOS#show dcb stack-unit 0 port-set 0

stack-unit 0 port-set 0
      DCB Status :  Enabled
  PFC Port Count :  56 (current), 56 (configured)
PFC Queue Count :  2  (current), 2  (configured)
FTOS#
```

Example 2 **Figure 7-2. no dcb enable on-next-reload Command Example**

```
FTOS#show dcb stack-unit 0 port-set 0

stack-unit 0 port-set 0
    DCB Status :  Enabled
PFC Port Count :  56 (current), 0  (configured)
PFC Queue Count :  2  (current), 0  (configured)
FTOS#
FTOS#conf t
FTOS(conf)#dcb enable ?
on-next-reload          Apply DCB configs on subsequent reload
FTOS(conf)#no dcb enable on-next-reload
FTOS(conf)#00:03:11: %STKUNIT0-M:CP %DIFFSERV-6-DCB_DISABLE_CFG_ON_RELOAD:
Global DCB will be disabled on subsequent reload, All reserved PFC buffers will
be deleted from each stack unit. For the pfc-buffering change to take effect,
please save the config and reload the system.

FTOS(conf)#end
FTOS#00:03:23: %STKUNIT0-M:CP %SYS-5-CONFIG_I: Configured from  console

FTOS#write memory
00:03:28: %STKUNIT0-M:CP %FILEMGR-5-FILESAVED: Copied running-config to
startup-config in flash by default

FTOS#reload

Proceed with reload [confirm yes/no]: yes
00:04:13: %STKUNIT0-M:CP %CHMGR-5-RELOAD: User request to reload the chassis
syncing disks... done
unmounting file systems...
unmounting /f10/flash (/dev/ld0e)...
unmounting /usr (mfs:31)...
unmounting /lib (mfs:23)...
unmounting /f10 (mfs:20)...
unmounting /tmp (mfs:15)...
unmounting /kern (kernfs)...
unmounting / (/dev/md0a)... done
rebooting...

FTOS#
FTOS#show dcb stack-unit 0 port-set 0

stack-unit 0 port-set 0
    DCB Status : Disabled
PFC Port Count :  0  (current), 0  (configured)
PFC Queue Count :  0  (current), 0  (configured)
FTOS#

PFC Queue Count :  2  (current), 2  (configured)
FTOS#
```

dcbx version

Configure the DCBX version used on the interface.

Syntax

dcbx version {auto | cee | cin | ieee-v2.5}

To remove the DCBX version, use the no dcbx version {auto | cee | cin | ieee-v2.5} command.

Parameters

auto | cee | cin | ieee-v2.5	Enter the DCBX version type used on the interface, where: • auto: configures the port to operate using the DCBX version received from a peer. • cee: configures the port to use CEE (Intel 1.01). • cin: configures the port to use Cisco-Intel-Nuova (DCBX 1.0). • ieee-v2.5: configures the port to use IEEE 802.1az (Draft 2.5).

Defaults

Auto

Command Modes

PROTOCOL LLDP

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

DCBX requires that you enable LLDP to advertise DCBX TLVs to peers.

Configure DCBX operation at the INTERFACE level on a switch or globally on the switch.To verify the DCBX configuration on a port, use the show interface dcbx detail command.

show dcb

Displays the data center bridging status, the number of PFC-enabled ports, and the number of PFC-enabled queues.

Syntax show dcb [stack-unit *unit-number*]

Parameters

unit number	Enter the DCB unit number. The valid values are 0 to 5.

Command Mode EXEC PRIVILEGE

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 7-3. show dcb Command Example

```
FTOS# show dcb
stack-unit 0 port-set 0
      DCB Status : Enabled
   PFC Port Count : 56 (current), 56 (configured)
 PFC Queue Count : 2 (current), 2 (configured)
```

Usage Information Specify a stack-unit number on the Master switch in a stack.

show interface dcbx detail

Displays the DCBX configuration on an interface.

Syntax show interface *port-type slot/port* dcbx detail

Parameters

port-type	Enter the port type.
slot/port	Enter the slot/port number.

Command Mode EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example **Figure 7-4. show interface dcbx detail Command Example**

```
FTOS#show int tengigabitethernet 1/49 dcbx detail

E-ETS Configuration TLV enabled                e-ETS Configuration TLV disabled
R-ETS Recommendation TLV enabled              r-ETS Recommendation TLV disabled
P-PFC Configuration TLV enabled                p-PFC Configuration TLV disabled
F-Application priority for FCOE enabled         f-Application Priority for FCOE
disabled
I-Application priority for iSCSI enabled       i-Application Priority for iSCSI
disabled
-------------------------------------------------------------------------------
-----------

Interface TenGigabitEthernet 1/49
   Port Role is Auto-Upstream
   DCBX Operational Status is Disabled
   Is Configuration Source? FALSE
   Local DCBX Compatibility mode is AUTO
   Local DCBX Configured mode is AUTO
   Peer Operating version is Not Detected
   Local DCBX TLVs Transmitted: ErPfi
FTOS#
```

Table 7-1 lists the show interface dcbx detail field descriptions.

Table 7-1. show interface dcbx detail Command Example Fields

Field	Description
Interface	Interface type with chassis slot and port number.
Port-Role	Configured the DCBX port role: auto-upstream or auto-downstream.
DCBX Operational Status	Operational status (enabled or disabled) used to elect a configuration source and internally propagate a DCB configuration. The DCBX operational status is the combination of PFC and ETS operational status.
Configuration Source	Specifies whether the port serves as the DCBX configuration source on the switch: true (yes) or false (no).
Local DCBX Compatibility mode	DCBX version accepted in a DCB configuration as compatible. In auto-detection mode, a port can only operate on a DCBX version supported on the remote peer.
Local DCBX Configured mode	DCBX version configured on the port: CEE, CIN, IEEE v2.5, or Auto (port auto-configures to use the DCBX version received from a peer).
Peer Operating version	DCBX version that the peer uses to exchange DCB parameters.
Local DCBX TLVs Transmitted	Transmission status (enabled or disabled) of advertised DCB TLVs (see TLV code at the top of the show command output).
Local DCBX Status: DCBX Operational Version	DCBX version advertised in Control TLVs.
Local DCBX Status: DCBX Max Version Supported	Highest DCBX version supported in Control TLVs.
Local DCBX Status: Sequence Number	Sequence number transmitted in Control TLVs.
Local DCBX Status: Acknowledgment Number	Acknowledgement number transmitted in Control TLVs.

Table 7-1. show interface dcbx detail Command Example Fields (continued)

Field	Description
Local DCBX Status: Protocol State	Current operational state of the DCBX protocol: Waiting for ACK or IN-SYNC.
Peer DCBX Status: DCBX Operational Version	DCBX version advertised in Control TLVs received from the peer device.
Peer DCBX Status: DCBX Max Version Supported	Highest DCBX version supported in Control TLVs received from the peer device.
Peer DCBX Status: Sequence Number	Sequence number transmitted in Control TLVs received from the peer device.
Peer DCBX Status: Acknowledgment Number	Acknowledgement number transmitted in Control TLVs received from the peer device.
Total DCBX Frames transmitted	Number of DCBX frames sent from the local port.
Total DCBX Frames received	Number of DCBX frames received from the remote peer port.
Total DCBX Frame errors	Number of DCBX frames with errors received.
Total DCBX Frames unrecognized	Number of unrecognizable DCBX frames received.

show interface ets

Displays the ETS configuration applied to egress traffic on an interface, including priority groups with priorities and bandwidth allocation.

Syntax show interface *port-type slot/port* ets {summary | detail}

Parameters

port-type slot/port ets	Enter the port-type slot and port ETS information.
{summary | detail}	Enter the keyword summary for a summary list of results or enter the keyword detail for a full list of results.

Command Mode EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example **Figure 7-5. show interfaces ets summary Command Example**

```
FTOS#show interface tengigabitethernet 1/1 ets summary

Interface TenGigabitEthernet 1/1
Max Supported TC Groups is 4
Number of Traffic Classes is 8
Admin mode is on

Admin Parameters :
------------------
Admin is enabled

TC-grp     Priority#         Bandwidth       TSA
-----------------------------------------------
0          0,1,2,3,4,5,6,7   100%            ETS
1                            -               -
2                            -               -
3                            -               -
4                            -               -
5                            -               -
6                            -               -
7                            -               -

Remote Parameters :
-------------------
Remote is disabled

Local Parameters :
------------------
Local is enabled

TC-grp     Priority#         Bandwidth       TSA
-----------------------------------------------
0          0,1,2,3,4,5,6,7   100%            ETS
1                            -               -
2                            -               -
3                            -               -
4                            -               -
5                            -               -
6                            -               -
7                            -               -

Oper status is internally propagated
ETS DCBX Oper status is Down
State Machine Type is Asymmetric
Conf TLV Tx Status is enabled
Reco TLV Tx Status is enabled


FTOS#
```

Example **Figure 7-6. show interfaces ets detail Command Example**

```
FTOS#show interface tengigabitethernet 1/1 ets detail

Interface TenGigabitEthernet 1/1
Max Supported TC Groups is 4
Number of Traffic Classes is 8
Admin mode is on

Admin Parameters:
------------------
Admin is enabled

TC-grp     Priority#         Bandwidth       TSA
-----------------------------------------------
0          0,1,2,3,4,5,6,7   100%            ETS
1                            -               -
2                            -               -
3                            -               -
4                            -               -
5                            -               -
6                            -               -
7                            -               -

Remote Parameters :
-------------------
Remote is disabled

Local Parameters :
------------------
Local is enabled

TC-grp     Priority#         Bandwidth       TSA
-----------------------------------------------
0          0,1,2,3,4,5,6,7   100%            ETS
1                            -               -
2                            -               -
3                            -               -
4                            -               -
5                            -               -
6                            -               -
7                            -               -

Oper status is internally propagated
ETS DCBX Oper status is Down
State Machine Type is Asymmetric
Conf TLV Tx Status is enabled
Reco TLV Tx Status is enabled

0 Input Conf TLV Pkts, 0 Output Conf TLV Pkts, 0 Error Conf TLV Pkts
0 Input Reco TLV Pkts, 0 Output Reco TLV Pkts, 0 Error Reco TLV Pkts

FTOS#
```

Usage Information

Table 7-2 lists the show interface ets summary field descriptions.

Table 7-2. show interfaces ets detail Command Example Fields

Field	Description
Interface	Interface type with stack-unit and port number.
Max Supported TC Group	Maximum number of priority groups supported.
Number of Traffic Classes	Number of 802.1p priorities currently configured.
Admin mode	ETS mode: on or off. When on, the scheduling and bandwidth allocation configured in an ETS output policy or received in a DCBX TLV from a peer can take effect on an interface.
Admin Parameters	ETS configuration on local port, including priority groups, assigned dot1p priorities, and bandwidth allocation.
Remote Parameters	ETS configuration on remote peer port, including admin mode (enabled if a valid TLV was received or disabled), priority groups, assigned dot1p priorities, and bandwidth allocation. If ETS admin mode is enabled on the remote port for DCBX exchange, the Willing bit received in ETS TLVs from the remote peer is included.
Local Parameters	ETS configuration on local port, including admin mode (enabled when a valid TLV is received from a peer), priority groups, assigned dot1p priorities, and bandwidth allocation.
Operational status (local port)	Port state for current operational ETS configuration: • Init: Local ETS configuration parameters were exchanged with the peer. • Recommend: Remote ETS configuration parameters were received from the peer. • Internally propagated: ETS configuration parameters were received from the configuration source.
ETS DCBX Oper status	Operational status of the ETS configuration on the local port: match or mismatch.
State Machine Type	Type of state machine used for DCBX exchanges of ETS parameters: Feature - for legacy DCBX versions; Asymmetric - for an IEEE version.
Conf TLV Tx Status	Status of ETS Configuration TLV advertisements: enabled or disabled.
Reco TLV Tx Status	Status of ETS Recommendation TLV advertisements: enabled or disabled
ETS TLV Statistic: Input Conf TLV pkts	Number of ETS Configuration TLVs received.
ETS TLV Statistic: Output Conf TLV pkts	Number of ETS Configuration TLVs transmitted.
ETS TLV Statistic: Error Conf TLV pkts	Number of ETS Error Configuration TLVs received.
ETS Reco TLV Statistic: Input Reco TLV pkts	Number of ETS Recommendation TLVs received.
ETS Reco TLV Statistic: Output Reco TLV pkts	Number of ETS Recommendation TLVs transmitted.
ETS Reco TLV Statistic: Error Reco TLV pkts	Number of ETS Error Recommendation TLVs received.

show interface pfc

Displays the PFC configuration applied to ingress traffic on an interface, including priorities and link delay.

Syntax show interface *port-type slot/port pfc* {summary | detail}

Parameters

port-type slot/port pfc	Enter the port-type slot and port PFC information.
{summary | detail}	Enter the keyword summary for a summary list of results or enter the keyword detail for a full list of results.

Command Mode EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 7-7. show interface pfc summary Command Example

```
FTOS# show interfaces tengigabitethernet 0/49 pfc summary
Interface TenGigabitEthernet 0/49
     Admin mode is on
     Admin is enabled
     Remote is enabled, Priority list is 4
     Remote Willing Status is enabled
     Local is enabled
     Oper status is Recommended
     PFC DCBX Oper status is Up
     State Machine Type is Feature
     TLV Tx Status is enabled
     PFC Link Delay 45556 pause quantams
     Application Priority TLV Parameters:
     ------------------------------------
     FCOE TLV Tx Status is disabled
     ISCSI TLV Tx Status is disabled
     Local FCOE PriorityMap is 0x8
     Local ISCSI PriorityMap is 0x10
     Remote FCOE PriorityMap is 0x8
     Remote ISCSI PriorityMap is 0x8
FTOS#
```

Example

Figure 7-8. show interface pfc detail Command Example

```
FTOS# show interfaces tengigabitethernet 0/49 pfc detail
Interface TenGigabitEthernet 0/49
     Admin mode is on
     Admin is enabled
     Remote is enabled
     Remote Willing Status is enabled
     Local is enabled
     Oper status is recommended
     PFC DCBX Oper status is Up
     State Machine Type is Feature
     TLV Tx Status is enabled
     PFC Link Delay 45556 pause quanta
     Application Priority TLV  Parameters :
     -------------------------------------
     FCOE TLV Tx Status is disabled
     ISCSI TLV Tx Status is disabled
     Local FCOE PriorityMap is 0x8
     Local ISCSI PriorityMap is 0x10
     Remote FCOE PriorityMap is 0x8
     Remote ISCSI PriorityMap is 0x8

     0 Input TLV pkts, 1 Output TLV pkts, 0 Error pkts, 0 Pause Tx pkts, 0 Pause
Rx pkts
```

Usage Information

Table 7-3 lists the show interface pfc summary field descriptions.

Table 7-3. show interfaces pfc summary Command Example Fields

Field	Description
Interface	Interface type with stack-unit and port number.
Admin mode is on Admin is enabled	PFC mode: on or off. Priority list: list of the configured PFC priorities (if any). When the PFC admin mode is on, PFC advertisements are enabled to be sent and received from peers.
Remote is enabled, Priority list, Remote Willing Status is enabled	Remote Admin mode: (enabled if a valid TLV was received or disabled) Priority list: list of the configured PFC priorities (if any). Remote Willing Status: Willing bit received in PFC TLVs from the remote peer.
Local is enabled	Local PFC configuration including the mode and the list of PFC priorities configured.
Operational status (local port)	Port state for current operational PFC configuration: • Init: Local PFC configuration parameters were exchanged with the peer. • Recommend: Remote PFC configuration parameters were received from the peer. • Internally propagated: PFC configuration parameters were received from the configuration source.
PFC DCBX Oper status	Operational status for the exchange of the PFC configuration on the local port: match (up) or mismatch (down).
State Machine Type	Type of state machine used for DCBX exchanges of the PFC parameters: Feature - for legacy DCBX versions; Symmetric - for an IEEE version.
TLV Tx Status	Status of the PFC TLV advertisements: enabled or disabled.

Table 7-3. show interfaces pfc summary Command Example Fields (continued)

Field	Description
PFC Link Delay	Link delay (in quanta) used to pause specified priority traffic.
Application Priority TLV: FCOE TLV Tx Status	Status of FCoE advertisements in application priority TLVs from the local DCBX port: enabled or disabled.
Application Priority TLV: SCSI TLV Tx Status	Status of ISCSI advertisements in application priority TLVs from the local DCBX port: enabled or disabled.
Application Priority TLV: Local FCOE Priority Map	Priority bitmap used by the local DCBX port in FCoE advertisements in application priority TLVs.
Application Priority TLV: Local ISCSI Priority Map	Priority bitmap used by the local DCBX port in ISCSI advertisements in application priority TLVs.
Application Priority TLV: Remote FCOE Priority Map	Priority bitmap received from the remote DCBX port in FCoE advertisements in application priority TLVs.
Application Priority TLV: Remote ISCSI Priority Map	Priority bitmap received from the remote DCBX port in iSCSI advertisements in application priority TLVs.
PFC TLV Statistics: Input TLV pkts	Number of PFC TLVs received.
PFC TLV Statistics: Output TLV pkts	Number of PFC TLVs transmitted.
PFC TLV Statistics: Error pkts	Number of PFC error packets received.
PFC TLV Statistics: Pause Tx pkts	Number of PFC pause frames transmitted.
PFC TLV Statistics: Pause Rx pkts	Number of PFC pause frames received.

show interface pfc statistics

Displays counters for the PFC frames received and transmitted (by dot1p priority class) on an interface.

Syntax show interface *port-type slot/port* pfc statistics

Parameters

port-type	Enter the port type.
slot/port	Enter the slot/port number.

Command Mode EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 7-9. show interfaces pfc statistics Command Example

```
FTOS#show interface tengigabitethernet 1/49 pfc statistics

Interface TenGigabitEthernet 1/49

Priority        Received Pfc Frames     Transmitted Pfc Frames
--------        -------------------     ----------------------
0               0                       0
1               0                       0
2               0                       0
3               0                       0
4               0                       0
5               0                       0
6               0                       0
7               0                       0
FTOS#
```

show stack-unit stack-ports ets detail

Displays the ETS configuration applied to egress traffic on stacked ports, including ETS operational mode on each unit and the configurated priority groups with dot1p priorities, bandwidth allocation, and scheduler type.

Syntax show stack-unit {all | *stack-unit*} stack-ports {all | *port-number*} ets detail

Parameters

stack-unit	Enter the stack unit identification.
port-number	Enter the port number.

Command Mode EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 7-10. show stack-unit stack-ports ets detail Command Example

```
FTOS#show stack-unit all stack-ports all ets details

Stack unit 1 stack port all
Max Supported TC Groups is 4
Number of Traffic Classes is 1
Admin mode is on

Admin Parameters:
--------------------
Admin is enabled
TC-grp     Priority#         Bandwidth       TSA
-----------------------------------------------
0          0,1,2,3,4,5,6,7   100%            ETS
1                            -               -
2                            -               -
3                            -               -
4                            -               -
5                            -               -
6                            -               -
7                            -               -
8                            -               -
FTOS#
```

show stack-unit stack-ports pfc detail

Displays the PFC configuration applied to ingress traffic on stacked ports, including PFC operational mode on each unit with the configured priorities, link delay, and number of pause packets sent and received.

Syntax show stack-unit {all | *stack-unit*} stack-ports {all | *port-number*} pfc detail

Parameters

stack-unit	Enter the stack unit.
port-number	Enter the port number.

Command Mode CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 7-11. show stack-unit all stack-ports all pfc details Command Example

```
FTOS#show stack-unit all stack-ports all pfc details

 stack unit 1 stack-port all
     Admin mode is On
     Admin is enabled
     Local is enabled
     Link Delay 45556 pause quantum
     0 Pause Tx pkts, 0 Pause Rx pkts
FTOS#
```

8

Dynamic Host Configuration Protocol (DHCP)

Overview

Dynamic host configuration protocol (DHCP) is an application layer protocol that dynamically assigns IP addresses and other configuration parameters to network end-stations (hosts) based on configuration policies determined by network administrators.

An Aggregator can operate as a DHCP client. As a DHCP client, the Aggregator requests an IP address from a DHCP server.

The following types of DHCP commands are described in this chapter:

- DHCP Client Commands
- Other Commands supported by DHCP Client

DHCP Client Commands

- ip address dhcp
- release dhcp interface
- renew dhcp interface
- show ip dhcp client statistics
- show ip dhcp lease

Other Commands supported by DHCP Client

- debug ip dhcp client events
- debug ip dhcp clients packets

ip address dhcp

Acquire an IP address dynamically on an interface from the DHCP server.

Syntax ip address dhcp

To diable DHCP Client on an interface, use the no ip address dhcp command.

Command Mode INTERFACE

Default Enabled

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information In the M I/O Aggregator, the DHCP client is enabled only on the default vlan and management interface 0/0. Use the ip address command to assign a static ip address that overwrites the dynamically assigned IP address.

clear ip dhcp client statistics

Displays DHCP client statistics, including the number of DHCP messages sent and received on an interface.

Syntax clear ip dhcp client statistics {all | interface *type slot*/*port*}

Parameters

all	Clear DHCP client statistics on all DHCP client-enabled interfaces on the switch.
interface *type slot*/*port*	Clear DHCP client statistics on the specified interface. • For the management interface on the stack-unit, enter the keyword managementethernet followed by slot/port information. The slot and port range is 0. • For a VLAN, enter the keyword vlan followed by a number from 1 to 4094.

Command Mode EXEC Privilege

Default None.

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

debug ip dhcp client events

Enable the display of log messages for the following events on DHCP client interfaces:

- IP address acquisition
- IP address release
- Renewal of IP address and lease time
- Release of an IP address

Syntax debug ip dhcp client events [interface *type slot*/*port*]

Parameters

interface *type slot/port*	Display log messages for DHCP packets sent and received on the specified interface. • For the management interface on the stack-unit, enter the keyword managementethernet followed by slot/port information. The slot and port range is 0. • For a VLAN, enter the keyword vlan followed by a number from 1 to 4094.

Command Mode EXEC Privilege

Default None

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

debug ip dhcp clients packets

Enable the display of log messages for all DHCP packets sent and received on DHCP client interfaces.

Syntax debug ip dhcp client packets [interface *type slot*/*port*]

Parameters

interface *type slot/port*	Display log messages for DHCP packets sent and received on the specified interface. • For the management interface on the stack-unit, enter the keyword managementethernet followed by slot/port information. The slot and port range is 0. • For a VLAN, enter the keyword vlan followed by a number from 1 to 4094.

Command Mode EXEC Privilege

Default None

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

release dhcp interface

Release the dynamically-acquired IP address on an Ethernet interface while retaining the DHCP client configuration on the interface.

Syntax release dhcp interface *type slot*/*port*

Parameters

interface *type slot/port*	• For the management interface on the stack-unit, enter the keyword managementethernet followed by slot/port information. The slot and port range is 0. • For a VLAN, enter the keyword vlan followed by a number from 1 to 4094.

Command Mode EXEC Privilege

Default None.

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

When you enter the **release dhcp** command, although the IP address that was dynamically-acquired from a DHCP server is released from an interface, the ability to acquire a new DHCP server-assigned address remains in the running configuration for the interface. To acquire a new IP address, enter either the **renew dhcp** command at the EXEC privilege level or the **ip address dhcp** command at the interface configuration level.

renew dhcp interface

Re-acquire a dynamic IP address on an Ethernet interface enabled as a DHCP client.

Syntax

renew dhcp interface *type slot*/*port*

Parameters

interface *type slot*/*port*	Enter any of the following keywords and slot/port or number to clear counters from a specified interface: • For the management interface on the stack-unit, enter the keyword managementethernet followed by slot/port information. The slot and port range is 0. • For a VLAN, enter the keyword vlan followed by a number from 1 to 4094.

Command Mode

EXEC Privilege

Default

None.

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

The **renew dhcp** command is used to renew the lease of IP address obtained through dhcp.

To display the currently configure dynamic IP address and lease time, enter the **show ip dhcp lease** command.

show ip dhcp client statistics

Displays DHCP client statistics, including the number of DHCP messages sent and received on an interface.

Syntax

show ip dhcp client statistics {all | interface *type slot*/*port*}

Parameters

all	Display DHCP client statistics on all DHCP client-enabled interfaces on the switch.
interface *type slot*/*port*	Display DHCP client statistics on the specified interface. • For the management interface on the stack-unit, enter the keyword managementethernet followed by slot/port information. The slot and port range is 0. • For a VLAN, enter the keyword vlan followed by a number from 1 to 4094.

Command Mode

EXEC Privilege

Default

None.

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

show ip dhcp lease

Displays lease information about the dynamic IP address currently assigned to a DHCP client-enabled interface.

Syntax show ip dhcp lease [interface *type slot*/*port*]

Parameters

interface *type slot/ port*	Display DHCP lease information on the specified interface. • For the management interface on the stack-unit, enter the keyword managementethernet followed by slot/port information. The slot and port range is 0. • For a VLAN, enter the keyword vlan followed by a number from 1 to 4094.

Command Mode EXEC Privilege

Default Display DHCP lease information on all DHCP client-enabled interfaces on the switch.

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

9

FIP Snooping

Overview

In a converged Ethernet network, an Aggregator can operate as an intermediate Ethernet bridge to snoop on Fibre Channel over Ethernet Initialization Protocol (FIP) packets during the login process on Fibre Channel over Ethernet (FCoE) forwarders (FCFs). Acting as a transit FIP snooping bridge, the switch uses dynamically-created ACLs to permit only authorized FCoE traffic to be transmitted between an FCoE end-device and an FCF.

FIP Snooping Commands

The following Dell Force10 operating software (FTOS) commands are used to configure and verify the FIP snooping feature:

- clear fip-snooping statistics
- debug fip-snooping
- show fip-snooping config
- show fip-snooping enode
- show fip-snooping fcf
- show fip-snooping sessions
- show fip-snooping statistics
- show fip-snooping system

clear fip-snooping statistics

Clear the statistics on the FIP packets snooped on all VLANs, a specified VLAN, or a specified port interface.

Syntax clear fip-snooping statistics [interface vlan *vlan-id* | interface *port-type port/slot* | interface port-channel *port-channel-number*]

Parameters

vlan-id	Enter the VLAN ID of the FIP packet statistics to be cleared.
port-type port/slot	Enter the port-type and slot number of the FIP packet statistics to be cleared.
port-channel-number]	Enter the port channel number of the FIP packet statistics to be cleared.

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

debug fip-snooping

Enable the debug FIP protocol specific messages.

Syntax debug fip-snooping [all | acl | error | ifm | info | ipc | rx]

Parameters

all	Enable all the debug options.
acl	Enable for ACL specific debugs
error	Enable for Error specific debugs
ifm	Enable for IFM specific debugs
info	Enable for Information specific debugs
ipc	Enable for IPC specific debugs
rx	Enable for packet receive specific debugs

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

show fip-snooping config

Displays the FIP snooping status and configured FC-MAP values.

Syntax show fip-snooping config

Command Mode

- EXEC
- EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 9-1. show fip-snooping config Command Example

```
FTOS#show fip-snooping config
FIP Snooping Feature enabled Status: Enabled
FIP Snooping Global enabled Status: Enabled
Global FC-MAP Value: 0X0EFC00
FTOS#
```

show fip-snooping enode

Displays information on the ENodes in FIP-snooped sessions, including the ENode interface and MAC address, FCF MAC address, VLAN ID, and FC-ID.

Syntax show fip-snooping enode [*enode-mac-address*]

Parameters

enode-mac-address	Enter the MAC address of the ENodes to be displayed.

Command Mode

- EXEC
- EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 9-2. show fip-snooping enode Command Example

```
FTOS# show fip-snooping enode
Enode MAC           Enode Interface     FCF MAC             VLAN      FC-ID
---------           ---------------     -------             ----      -----
d4:ae:52:1b:e3:cd   Te 0/11             54:7f:ee:37:34:40   100       62:00:11
```

Table 9-1. show fip-snooping enode Command Field Description

Field	Description
ENode MAC	MAC address of the ENode
ENode Interface	Slot/ port number of the interface connected to the ENode.
FCF MAC	MAC address of the FCF
VLAN	VLAN ID number used by the session
FC-ID	Fibre Channel session ID assigned by the FCF.

show fip-snooping fcf

Displays information on the FCFs in FIP-snooped sessions, including the FCF interface and MAC address, FCF interface, VLAN ID, FC-MAP value, FKA advertisement period, and number of ENodes connected.

Syntax show fip-snooping fcf [*fcf-mac-address*]

Parameters

fcf-mac-address	Enter the MAC address of the FCF to be displayed.

Command Mode

- EXEC
- EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

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Example **Figure 9-3. show fip-snooping fcf Command Example**

```
FTOS# show fip-snooping fcf
FCF MAC            FCF Interface       VLAN      FC-MAP    FKA_ADV_PERIOD   No. of Enodes
-------            -------------       ----      ------    --------------   -------------
54:7f:ee:37:34:40     Po 128             100       0e:fc:00       4000           1
```

Table 9-2 lists the show fip-snooping fcf command field descriptions.

Table 9-2. show fip-snooping fcf Command Field Descriptions

Field	Description
FCF MAC	MAC address of the FCF
FCF Interface	Slot/port number of the interface to which the FCF is connected.
VLAN	VLAN ID number used by the session
FC-MAP	FC-Map value advertised by the FCF.
FKA_ADV_PERIOD	Period of time (in milliseconds) during which FIP keep-alive advertisements are transmitted.
No of ENodes	Number of ENodes connected to the FCF

show fip-snooping sessions

Displays information on FIP-snooped sessions on all VLANs or a specified VLAN, including the ENode interface and MAC address, the FCF interface and MAC address, VLAN ID, FCoE MAC address and FCoE session ID number (FC-ID), worldwide node name (WWNN) and the worldwide port name (WWPN).

Syntax show fip-snooping sessions [interface vlan *vlan-id*]

Parameters

vlan-id	Enter the vlan-id of the specified VLAN to be displayed.

Command Mode

- EXEC
- EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 9-4. show fip-snooping sessions Command Example

```
FTOS#show fip-snooping sessions
Enode MAC          Enode Intf     FCF MAC    FCF Intf VLAN FCoE MAC        FC-ID
00:0e:1e:0c:54:a6 Te 0/14 00:05:73:f2:4f:ae Po128 100 0e:fc:00:9a:00:27 9a:00:27 20:01:00:0e:1e:0c:54:a6
00:0e:1e:06:01:5e Te 0/16 00:05:73:f2:4f:af Po128 100 0e:fc:00:9a:01:18 9a:01:18 20:01:00:0e:1e:06:01:5

Port WWNN
20:00:00:0e:1e:0c:54:a6
20:00:00:0e:1e:0c:54:a6
```

Table 9-3 lists the show fip-snooping sessions command field descriptions.

Table 9-3. show fip-snooping sessions Command Field Description

Field	Description
ENode MAC	MAC address of the ENode.
ENode Interface	Slot/ port number of the interface connected to the ENode.
FCF MAC	MAC address of the FCF.
FCF Interface	Slot/ port number of the interface to which the FCF is connected.
VLAN	VLAN ID number used by the session.
FCoE MAC	MAC address of the FCoE session assigned by the FCF.
FC-ID	Fibre Channel ID assigned by the FCF.
Port WWPN	Worldwide port name of the CNA port.
Port WWNN	Worldwide node name of the CNA port.

show fip-snooping statistics

Displays statistics on the FIP packets snooped on all interfaces, including VLANs, physical ports, and port channels.

Syntax show fip-snooping statistics [interface vlan *vlan-id* | interface *port-type port/slot* | interface port-channel *port-channel-number*]

Parameters

vlan-id	Enter the VLAN ID of the FIP packet statistics to be displayed.
port-type port/slot	Enter the port-type and slot number of the FIP packet statistics to be displayed.
port-channel-number]	Enter the port channel number of the FIP packet statistics to be displayed.

Command Mode

- EXEC
- EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 9-5. show fip-snooping statistics Command Example

```
FTOS# show fip-snooping statistics interface vlan 100
Number of Vlan Requests                                :0
Number of Vlan Notifications                           :0
Number of Multicast Discovery Solicits                 :2
Number of Unicast Discovery Solicits                   :0
Number of FLOGI                                        :2
Number of FDISC                                        :16
Number of FLOGO                                        :0
Number of Enode Keep Alive                             :9021
Number of VN Port Keep Alive                           :3349
Number of Multicast Discovery Advertisement            :4437
Number of Unicast Discovery Advertisement              :2
Number of FLOGI Accepts                                :2
Number of FLOGI Rejects                                :0
Number of FDISC Accepts                                :16
Number of FDISC Rejects                                :0
Number of FLOGO Accepts                                :0
Number of FLOGO Rejects                                :0
Number of CVL                                          :0
Number of FCF Discovery Timeouts                       :0
Number of VN Port Session Timeouts                     :0
Number of Session failures due to Hardware Config      :0
FTOS(conf)#

FTOS# show fip-snooping statistics int tengigabitethernet 0/11
Number of Vlan Requests                                :1
Number of Vlan Notifications                           :0
Number of Multicast Discovery Solicits                 :1
Number of Unicast Discovery Solicits                   :0
Number of FLOGI                                        :1
Number of FDISC                                        :16
Number of FLOGO                                        :0
Number of Enode Keep Alive                             :4416
Number of VN Port Keep Alive                           :3136
Number of Multicast Discovery Advertisement            :0
Number of Unicast Discovery Advertisement              :0
Number of FLOGI Accepts                                :0
Number of FLOGI Rejects                                :0
Number of FDISC Accepts                                :0
Number of FDISC Rejects                                :0
Number of FLOGO Accepts                                :0
Number of FLOGO Rejects                                :0
Number of CVL                                          :0
Number of FCF Discovery Timeouts                       :0
Number of VN Port Session Timeouts                     :0
Number of Session failures due to Hardware Config      :0
```

Figure 9-6. show fip-snooping statistics (port channel) Command Example

```
FTOS# show fip-snooping statistics interface port-channel 22
Number of Vlan Requests                                :0
Number of Vlan Notifications                           :2
Number of Multicast Discovery Solicits                 :0
Number of Unicast Discovery Solicits                   :0
Number of FLOGI                                        :0
Number of FDISC                                        :0
Number of FLOGO                                        :0
Number of Enode Keep Alive                             :0
Number of VN Port Keep Alive                           :0
Number of Multicast Discovery Advertisement            :4451
Number of Unicast Discovery Advertisement              :2
Number of FLOGI Accepts                                :2
Number of FLOGI Rejects                                :0
Number of FDISC Accepts                                :16
Number of FDISC Rejects                                :0
Number of FLOGO Accepts                                :0
Number of FLOGO Rejects                                :0
Number of CVL                                          :0
Number of FCF Discovery Timeouts                       :0
Number of VN Port Session Timeouts                     :0
Number of Session failures due to Hardware Config      :0
```

Table 9-4 lists the show fip-snooping statistics command field descriptions.

Table 9-4. show fip-snooping statistics Command Fields Description

Field	Description
Number of Vlan Requests	Number of FIP-snooped VLAN request frames received on the interface
Number of VLAN Notifications	Number of FIP-snooped VLAN notification frames received on the interface.
Number of Multicast Discovery Solicits	Number of FIP-snooped multicast discovery solicit frames received on the interface
Number of Unicast Discovery Solicits	Number of FIP-snooped unicast discovery solicit frames received on the interface
Number of FLOGI	Number of FIP-snooped FLOGI request frames received on the interface
Number of FDISC	Number of FIP-snooped FDISC request frames received on the interface
Number of FLOGO	Number of FIP-snooped FLOGO frames received on the interface
Number of ENode Keep Alives	Number of FIP-snooped ENode keep-alive frames received on the interface
Number of VN Port Keep Alives	Number of FIP-snooped VN port keep-alive frames received on the interface
Number of Multicast Discovery Advertisements	Number of FIP-snooped multicast discovery advertisements received on the interface
Number of Unicast Discovery Advertisements	Number of FIP-snooped unicast discovery advertisements received on the interface

Table 9-4. show fip-snooping statistics Command Fields Description (continued)

Field	Description
Number of FLOGI Accepts	Number of FIP FLOGI accept frames received on the interface
Number of FLOGI Rejects	Number of FIP FLOGI reject frames received on the interface
Number of FDISC Accepts	Number of FIP FDISC accept frames received on the interface
Number of FDISC Rejects	Number of FIP FDISC reject frames received on the interface
Number of FLOGO Accepts	Number of FIP FLOGO accept frames received on the interface
Number of FLOGO Rejects	Number of FIP FLOGO reject frames received on the interface
Number of CVLs	Number of FIP clear virtual link frames received on the interface
Number of FCF Discovery Timeouts	Number of FCF discovery timeouts that occurred on the interface
Number of VN Port Session Timeouts	Number of VN port session timeouts that occurred on the interface
Number of Session failures due to Hardware Config	Number of session failures due to hardware configuration that occurred on the interface

show fip-snooping system

Displays information on the status of FIP snooping on the switch (enabled or disabled), including the number of FCoE VLANs, FCFs, ENodes, and currently active sessions.

Syntax show fip-snooping system

Command Mode
- EXEC
- EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 9-7. show fip-snooping system Command Example

```
FTOS# show fip-snooping system
Global Mode                     : Enabled
FCOE VLAN List (Operational)    : 1, 100
FCFs                            : 1
Enodes                          : 2
Sessions                        : 17
```

10

Internet Group Management Protocol (IGMP)

IGMP Commands

The Dell Force10 operating software (FTOS) supports internet group management protocol (IGMP) snooping version 2 and 3 on all Dell Force10 systems:

- clear ip igmp groups
- debug ip igmp
- ip igmp snooping flood
- show ip igmp groups
- show ip igmp interface
- show ip igmp snooping mrouter

Important Points to Remember

- FTOS supports version 1, version 2, and version 3 hosts.
- FTOS IGMP snooping implementation is based on IP multicast address (not based on Layer 2 multicast mac-address) and the IGMP snooping entries are in Layer 3 flow table not in Layer 2 forwarding information base (FIB).
- FTOS IGMP snooping implementation is based on draft-ietf-magma-snoop-10.
- IGMP snooping is supported on all M I/O Aggregator stack members.
- IGMP snooping is enabled by default on the switch.
- A maximum of 8k groups and 4k virtual local area networks (VLAN) are supported.
- IGMP snooping is not supported on default VLAN interface.
- Flooding of unregistered multicast traffic is enabled by default.
- Queries are not accepted from the server side ports and are only accepted from the uplink LAG.
- Reports and Leaves are flooded by default to the uplink LAG irrespective of whether it is an mrouter port or not.

clear ip igmp groups

Clear entries from the group cache table.

Syntax clear ip igmp groups [group-address | interface]

Parameters

group-address	(OPTIONAL) Enter the IP multicast group address in dotted decimal format.
interface	(OPTIONAL) Enter the interface type and slot/port information: For a VLAN interface enter the keyword vlan followed by a number from 1 to 4094.

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

debug ip igmp

Enable debugging of IGMP packets.

Syntax debug ip igmp [group address | interface]

To disable IGMP debugging, enter the no ip igmp command. To disable all debugging, enter the undebug all command.

Defaults Disabled

Parameters

group-address	(OPTIONAL) Enter the IP multicast group address in dotted decimal format.
interface	(OPTIONAL) Enter the interface type and slot/port information: For a VLAN interface enter the keyword vlan followed by a number from 1 to 4094.

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

ip igmp snooping flood

This command controls the flooding behavior of unregistered multicast data packets.When flooding is disabled, unregistered multicast data traffic is forwarded to *only* multicast router ports in a VLAN. If there is no multicast router port in a VLAN, unregistered multicast data traffic is dropped.

Syntax ip igmp snooping flood

Defaults Enabled

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

show ip igmp groups

View the IGMP groups.

Syntax show ip igmp groups [group-address [detail] | detail | interface [group-address [detail]]]

Parameters

group-address	(OPTIONAL) Enter the group address in dotted decimal format to view information on that group only.
interface	(OPTIONAL) Enter the interface type and slot/port information: For a VLAN interface enter the keyword vlan followed by a number from 1 to 4094.
detail	(OPTIONAL) Enter the keyword detail to display the IGMPv3 source information.

Command Modes

EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 10-1. show ip igmp snooping mrouter Command Example

```
FTOS#show ip igmp groups
Total Number of Groups: 5
IGMP Connected Group Membership
Group Address    Interface                Mode          Uptime
Expires   Last Reporter
225.0.0.0        Vlan 100                 IGMPv2        00:00:05
00:02:04  3.0.0.51
  Member Ports: Po 2
225.0.0.1        Vlan 100                 IGMPv2        00:00:05
00:02:04  3.0.0.51
  Member Ports: Po 2
225.0.0.2        Vlan 100                 IGMPv2        00:00:05
00:02:04  3.0.0.51
  Member Ports: Po 2
225.0.0.3        Vlan 100                 IGMPv2        00:00:05
00:02:04  3.0.0.51
  Member Ports: Po 2
225.0.0.4        Vlan 100                 IGMPv2        00:00:05
00:02:04  3.0.0.51
  Member Ports: Po 2
```

Table 10-1. show ip igmp groups Command Example Fields

Field	Description
Group Address	Lists the multicast address for the IGMP group.
Interface	Lists the interface type, slot and port number.
Mode	Displays the IGMP version used.
Uptime	Displays the amount of time the group has been operational.
Expires	Displays the amount of time until the entry expires.
Last Reporter	Displays the IP address of the last host to be a member of the IGMP group.
Member Ports	Indicates the member ports of the port channel. If the port channel is VLT, an asterisk (*) after the port channel number indicates the port channel is locally down and that a remote VLT port is up.

show ip igmp interface

View information on the interfaces participating in IGMP.

Syntax show ip igmp interface [*interface*]

Parameters

interface	(OPTIONAL) Enter any of the following keywords and slot/port or number to clear counters from a specified interface: • For a Port Channel interface, enter the keyword port-channel followed by a number. Range: 1-128 • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information. • For a VLAN, enter the keyword vlan followed by a number from 1 to 4094.

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 10-2. show ip igmp snooping mrouter Command Example

```
FTOS#show ip igmp interface
Vlan 2 is up, line protocol is down
  Inbound IGMP access group is not set
  Interface IGMP group join rate limit is not set
  IGMP snooping is enabled on interface
  IGMP Snooping query interval is 60 seconds
  IGMP Snooping querier timeout is 125 seconds
  IGMP Snooping last member query response interval is 1000 ms
  IGMP snooping fast-leave is disabled on this interface
  IGMP snooping querier is disabled on this interface
Vlan 3 is up, line protocol is down
  Inbound IGMP access group is not set
  Interface IGMP group join rate limit is not set
  IGMP snooping is enabled on interface
  IGMP Snooping query interval is 60 seconds
  IGMP Snooping querier timeout is 125 seconds
  IGMP Snooping last member query response interval is 1000 ms
  IGMP snooping fast-leave is disabled on this interface
  IGMP snooping querier is disabled on this interface
--More--
```

show ip igmp snooping mrouter

Displays multicast router interfaces.

Syntax show ip igmp snooping mrouter [vlan *number*]

Parameters

vlan *number*	Enter the keyword vlan followed by the vlan number. Range: 1 to 4094

Command Modes

EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 10-3. show ip igmp snooping mrouter Command Example

```
FTOS#show ip igmp snooping mrouter vlan 2
Interface Router Ports
Vlan 2    Po 128
FTOS#
```

Related Commands

show ip igmp groups	Use this IGMP command to view groups.

11

Interfaces

Overview

This chapter defines interface commands and is divided into the following sections:

- Port Interface Commands
- Port Channel Commands
- Time Domain Reflectometer (TDR) Commands

Port Interface Commands

The following commands are for physical, loopback, and null interfaces:

- clear counters
- clear mac-address-table dynamic
- interface range
- interface range macro (define)
- interface range macro name
- interface vlan
- keepalive
- monitor interface
- name
- show config (INTERFACE mode)
- show config (from INTERFACE RANGE mode)
- show config (from INTERFACE VLAN mode)
- show interfaces configured
- show interfaces description
- show interfaces stack-unit
- show interfaces port-channel
- show interfaces status
- show interfaces switchport
- show range
- show vlan
- shutdown
- speed (for 1000/10000/auto interfaces)

Port Channel Commands

A link aggregation group (LAG) is a group of links that appear to a MAC client as if they were a single link according to IEEE 802.3ad. In FTOS, a LAG is referred to as a Port Channel.

Table 11-1. Port Channel Limits

Platform	Maximum Port Channel IDs	Maximum Members per Port Channel
M I/O Aggregator	128	16

Because each port can be assigned to only one Port Channel, and each Port Channel must have at least one port, some of those nominally available Port Channels might have no function because they could have no members if there are not enough ports installed. In the M I/O Aggregator, those ports could be provided by stack members.

The commands in this section are specific to Port Channel interfaces:

- auto vlan
- group
- monitor interface
- show config (from INTERFACE RANGE mode)
- show interfaces port-channel

Note: The FTOS implementation of LAG or Port Channel requires that you configure a LAG on both switches manually. For information on FTOS Link Aggregation Control Protocol (LACP) for dynamic LAGs, refer to Chapter 14, Link Aggregation Control Protocol (LACP).

For more information on configuring and using Port Channels, refer to the *Dell PowerEdge Configuration Guide for the M I/O Aggregator*.

Time Domain Reflectometer (TDR) Commands

Time domain reflectormeter (TDR) is useful for troubleshooting an interface that is not establishing a link; either it is flapping or not coming up at all. TDR detects open or short conditions of copper cables on 100/1000/10GBase-T modules.

- tdr-cable-test
- show tdr

Important Points to Remember

- The interface and port must be enabled (configured—see the interface command) before running TDR. An error message is generated if you have not enabled the interface.
- The interface on the far-end device must be shut down before running TDR.
- Because TDR is an intrusive test on an interface that is not establishing a link, do not run TDR on an interface that is passing traffic.
- When testing between two devices, do not run the test on both ends of the cable.

Virtual LAN (VLAN) Commands

The following commands configure and monitor virtual local area networks (VLANs). VLANs are a virtual interface and use many of the same commands as physical interfaces.

You can configure an IP address and Layer 3 protocols on a VLAN called Inter-VLAN routing. FTP, TFTP, ACLs, and SNMP are not supported on a VLAN.

Occasionally, while sending broadcast traffic over multiple Layer 3 VLANs, the virtual router redundancy protocol (VRRP) state of a VLAN interface may continually switch between Master and Backup.

- auto vlan
- default vlan-id
- name
- show config (from INTERFACE VLAN mode)
- show vlan
- vlan tagged
- vlan untagged

auto vlan

Change the port to auto or admin vlan mode (enable or disable all auto VLANs).

Syntax auto vlan <cr>

To remove membership from 4K VLAN, use the no auto vlan command.

Parameters

description	Enter a text string description to identify the VLAN (80 characters maximum).

Defaults none

Command Modes INTERFACE

Usage Information The auto vlan command adds the port as untagged to default vlan and tagged to all other 4K-1 VLAN.

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

clear counters

Clear the counters used in the show interfaces commands for all VRRP groups, VLANs, and physical interfaces, or selected ones.

Syntax clear counters *interface*

Parameters

interface	(OPTIONAL) Enter any of the following keywords and slot/port or number to clear counters from a specified interface: • For the management interface on the stack-unit, enter the keyword managementethernet followed by slot/port information. The slot and port range is 0. • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information. • For a Port Channel interface, enter the keyword port-channel followed by a number. Range: 1-128

Defaults Without a specific interface specified, the command clears all interface counters.

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 11-1. clear counters Command Example

```
FTOS#clear counters
Clear counters on all interfaces [confirm]
```

clear mac-address-table dynamic

Clear the MAC address table of all MAC addresses learned dynamically.

Syntax clear mac-address-table dynamic {interface tengigabitethernet *slot/port-id*}

Parameters

interface	Enter the keyword interface range and one of the interfaces — slot/port, port-channel or VLAN number. Select the range of interfaces for bulk configuration. You can enter up to six comma separated ranges—spaces are **not** required between the commas. Comma-separated ranges can include VLANs, port-channels and physical interfaces. Slot/Port information must contain a space before and after the dash. For example, interface range tengigabitethernet 0/1 - 5 is valid; interface range tengigabitethernet 0/1-5 is not valid. • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information.

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

default vlan-id

Set the default VLAN-id.

Syntax

default vlan-id <*vlan-id*>

To set the default VLAN-id, use the no default vlan-id command.

Defaults

none

Command Modes

CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Related Commands

show vlan	Displays VLAN configuration.

description

Assign a descriptive text string to the interface.

Syntax

description *desc_text*

To delete a description, enter no description.

Parameters

desc_text	Enter a text string up to 240 characters long.

Defaults

No description is defined.

Command Modes

INTERFACE

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

- Spaces between characters are not preserved after entering this command unless you enclose the entire description in quotation marks ("*desc_text*").
- Entering a text string after the default vlan-id command overwrites any previous text string configured as the description.
- The show tdr and default vlan-id commands are the only commands that you can configure on an interface that is a member of a port-channel.
- Use the show interfaces description command to display descriptions configured for each interface.

Related Commands

show interfaces description	Displays the description field of interfaces.

group

Group two LAGs in a supergroup (“fate-sharing group” or “failover group”).

Syntax group *group_number* port-channel *number* port-channel *number*

To remove an existing LAG supergroup, use the no group *group_number* command.

Parameters

group_number	Enter an integer from 1 to 32 that will uniquely identify this LAG fate-sharing group.
port-channel *number*	Enter the keyword port-channel followed by an existing LAG *number*. Enter this keyword/variable combination twice, identifying the two LAGs to be paired.

Defaults none

Command Modes PORT-CHANNEL FAILOVER-GROUP (conf-po-failover-grp)

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 11-2. group Command Example

```
FTOS(conf)#port-channel failover-group
FTOS(conf-po-failover-grp)#group 1 port-channel 1 port-channel 2
FTOS(conf-po-failover-grp)#
```

Related Commands

show interfaces port-channel	Displays information on configured Port Channel groups.

interface range

This command permits configuration of a range of interfaces to which subsequent commands are applied (bulk configuration). Using the interface range command, you can enter identical commands for a range of interface.

Syntax interface range *interface*, *interface*,...

Parameters

interface, *interface*,...	Enter the keyword interface range and one of the interfaces — slot/port, port-channel or VLAN number. Select the range of interfaces for bulk configuration. You can enter up to six comma separated ranges—spaces are **not** required between the commas. Comma-separated ranges can include VLANs, port-channels and physical interfaces. Slot/Port information must contain a space before and after the dash. For example, interface range tengigabitethernet 0/1 - 5 is valid; interface range tengigabitethernet 0/1-5 is not valid. • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information. • For a VLAN, enter the keyword vlan followed by a number from 1 to 4094.

Defaults none

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

When creating an interface range, interfaces appear in the order they are entered; they are not sorted. The command verifies that interfaces are present (physical) or configured (logical). Important things to remember:

- Bulk configuration is created if at least one interface is valid.
- Non-existing interfaces are excluded from the bulk configuration with a warning message.
- The interface range prompt includes interface types with slot/port information for valid interfaces. The prompt allows for a maximum of 32 characters. If the bulk configuration exceeds 32 characters, it is represented by an ellipsis (...).
- When the interface range prompt has multiple port ranges, the smaller port range is excluded from the prompt.
- If overlapping port ranges are specified, the port range is extended to the smallest start port and the biggest end port.

Example

Figure 11-3. Bulk Configuration Warning Message

```
FTOS(conf)#interface range tengig 2/0 - 1 , tengig 10/0 , tengig 3/0
, fa 0/0
% Warning: Non-existing ports (not configured) are ignored by
interface-range
```

Example

Figure 11-4. Interface Range prompt with Multiple Ports

```
FTOS(conf)#interface range tengig 2/0 - 23 , tengig 2/1 - 10
FTOS(conf-if-range-tengig-2/0-23#
```

Example

Figure 11-5. Interface Range prompt Overlapping Port Ranges

```
FTOS(conf)#interface range tengig 2/1 - 11 , tengig 2/1 - 23
FTOS(conf-if-range-tengig-2/1-23#
```

Only VLAN and port-channel interfaces created using the interface vlan and vlan tagged commands can be used in the interface range command.

Use the show running-config command to display the VLAN and port-channel interfaces. VLAN or port-channel interfaces that are not displayed in the show running-config command cannot be used with the bulk configuration feature of the interface range command. You cannot create virtual interfaces (VLAN, Port-channel) using the interface range command.

Note: If a range has VLAN, physical, and port-channel interfaces, only commands related to physical interfaces can be bulk configured. To configure commands specific to VLAN or port-channel, only those respective interfaces should be configured in a particular range.

Figure 11-6 is an example of a single range bulk configuration.

Example **Figure 11-6. Single Range Bulk Configuration**

```
FTOS(conf)# interface range tengigabitethernet 5/1 - 23
FTOS(conf-if-range)# no shutdown
FTOS(conf-if-range)#
```

Figure 11-7 shows how to use commas to add different interface types to the range enabling all Ten Gigabit Ethernet interfaces in the range 5/1 to 5/23 and both Ten Gigabit Ethernet interfaces 1/1 and 1/2.

Example **Figure 11-7. Multiple Range Bulk Configuration Gigabit Ethernet and Ten Gigabit Ethernet**

```
FTOS(conf-if)# interface range tengigabitethernet 5/1 - 23, tengigabitethernet 1/1 - 2
FTOS(conf-if-range)# no shutdown
FTOS(conf-if-range)#
```

Figure 11-8 shows how to use commas to add VLAN and port-channel interfaces to the range.

Example **Figure 11-8. Multiple Range Bulk Configuration with VLAN and port channel**

```
FTOS(conf-if)# interface range tengigabitethernet 5/1 - 23, tengigabitethernet 1/1 – 2,
Vlan 2 – 100 , Port 1 – 25
FTOS(conf-if-range)# no shutdown
FTOS(conf-if-range)#
```

Related Commands

show config (from INTERFACE RANGE mode)	Shows the bulk configuration interfaces.
show interfaces status	Displays a summary of interface information.
interface range macro (define)	Defines a macro for an interface-range.

interface range macro (define)

Defines a macro for an interface range and then saves the macro in the running configuration.

Syntax define interface range macro *name interface* , *interface* , ...

Parameters

name	Enter up to 16 characters for the macro name.
interface , *interface* ,...	Enter the interface keyword (see below) and one of the interfaces slot/port, port-channel or VLAN numbers. Select the range of interfaces for bulk configuration. You can enter up to six comma separated ranges—spaces are **not** required between the commas. Comma-separated ranges can include VLANs, port-channels and physical interfaces. Slot/Port information must contain a space before and after the dash. For example, interface range tengigabitethernet 0/1 - 5 is valid; interface range tengigabitethernet 0/1-5 is not valid. • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information. • For a VLAN, enter the keyword vlan followed by a number from 1 to 4094.

Defaults none

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information Figure 11-9 is an example of how to define an interface range macro named *test*. To display the macro definition, execute the show running-config command.

Example

Figure 11-9. define interface-range macro Command Example

```
FTOS(conf)# define interface-range test tengigabitethernet 0/0 - 3 ,
tengigabitethernet 5/0 - 47 , tengigabitethernet 13/0 - 89

FTOS# show running-config | grep define
define interface-range test tengigabitethernet 0/0 - 3 , tengigabitethernet 5/0 -
47 , tengigabitethernet 13/0 - 89
FTOS(conf)#interface range macro test
FTOS(conf-if-range-te-0/0-3,te-5/0-47,te-13/0-89)#
```

Related Commands

group	Configures a range of command (bulk configuration)
interface range macro name	Runs an interface range macro.

interface range macro *name*

Run the interface-range macro to automatically configure the pre-defined range of interfaces.

Syntax interface range macro *name*

Parameters

name	Enter the name of an existing macro.

Defaults none

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information Figure 11-10 runs the macro named *test* that was defined earlier.

Example

Figure 11-10. interface-range macro Command Example

```
FTOS(conf)#interface range macro test
FTOS(conf-if-range-te-0/0-3,tengig-5/0-47,tengig-13/0-89)#
```

Related Commands

group	Configures a range of command (bulk configuration)
interface range macro (define)	Defines a macro for an interface range (bulk configuration)

interface vlan

Configure the default VLAN to enable Static or DCHP IP configuration

Syntax interface vlan *vlan-id*

To delete a VLAN, use the no interface vlan *vlan-id* command.

Parameters

vlan-id	Enter 1 for the default VLAN.

Defaults Not configured

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information For more information about VLANs and the commands to configure them, refer to Virtual LAN (VLAN) Commands.

Example

Figure 11-11. interface vlan Command Example

```
FTOS(conf)#int vlan 3
FTOS(conf-if-vl-3)#
```

Related Commands

show vlan	Displays the current VLAN configuration on the switch.
vlan tagged	Adds a Layer 2 interface to a VLAN as a tagged interface.
vlan untagged	Adds a Layer 2 interface to a VLAN as an untagged interface.

keepalive

Keep the interface alive when it is not transmitting data.

Syntax keepalive

Defaults Enabled

Command Modes INTERFACE

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information When you configure keepalive, the system keeps the link is up even if the link is not active at the time.

monitor interface

Monitor counters on a single interface or all interfaces on a stack unit. The screen is refreshed every 5 seconds and the CLI prompt disappears.

Syntax

monitor interface [*interface*]

To disable monitoring and return to the CLI prompt, press the q key.

Parameters

interface	(OPTIONAL) Enter the following keywords and slot/port or number information: • For the management port, enter the keyword managementethernet followed by the slot (0-1) and the port (0). • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information. • For a Port Channel interface, enter the keyword port-channel followed by a number. Range: 1-128

Command Modes

EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

The delta column displays changes since the last screen refresh.

Example

Figure 11-12. monitor Command Example of a Single Interface

```
systest-3   Monitor time: 00:00:06   Refresh Intvl.: 2s   Time: 03:26:26

Interface: tengig 0/3, Enabled, Link is Up, Linespeed is 1000 Mbit

 Traffic statistics:              Current           Rate                Delta
        Input bytes:              9069828         43 Bps                   86
       Output bytes:            606915800         43 Bps                   86
      Input packets:                54001          0 pps                    1
     Output packets:              9401589          0 pps                    1
        64B packets:                   67          0 pps                    0
   Over 64B packets:                49166          0 pps                    1
  Over 127B packets:                  350          0 pps                    0
  Over 255B packets:                 1351          0 pps                    0
  Over 511B packets:                  286          0 pps                    0
 Over 1023B packets:                 2781          0 pps                    0
Error statistics:
    Input underruns:                    0          0 pps                    0
       Input giants:                    0          0 pps                    0
    Input throttles:                    0          0 pps                    0
          Input CRC:                    0          0 pps                    0
  Input IP checksum:                    0          0 pps                    0
      Input overrun:                    0          0 pps                    0
   Output underruns:                    0          0 pps                    0
   Output throttles:                    0          0 pps                    0

      m - Change mode                          c - Clear screen
      l - Page up                              a - Page down
      T - Increase refresh interval            t - Decrease refresh interval
      q - Quit
```

Table 11-2. monitor Command Menu Options

Key	Description
systest-3	Displays the host name assigned to the system.
monitor time	Displays the amount of time since the monitor interface command was entered.
time	Displays the amount of time the chassis is up (since last reboot).

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Table 11-2. monitor Command Menu Options

Key	Description
m	Change the view from a single interface to all interfaces on the stack unit or visa-versa.
c	Refresh the view.
b	Change the counters displayed from Packets on the interface to Bytes.
r	Change the [delta] column from change in the number of packets/bytes in the last interval to rate per second.
l	Change the view to next interface on the stack unit, or if in the stack unit mode, the next stack unit in the chassis.
a	Change the view to the previous interface on the stack unit, or if the stack unit mode, the previous stack unit in the chassis.
T	Increase the screen refresh rate.
t	Decrease the screen refresh rate.
q	Return to the CLI prompt.

name

Assign a name to the Default VLAN.

Syntax

name *vlan-name*

To remove the name from the VLAN, use the no name command.

Parameters

vlan-name	Enter up to 32 characters as the name of the VLAN.

Defaults

Not configured.

Command Modes

INTERFACE VLAN

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

This CLI applies only to the Default VLAN.

To display information about a named VLAN, enter the show vlan command with the name parameter or the show interfaces description command.

Related Commands

default vlan-id	Assigns a descriptive text string to the interface.
interface vlan	Configures a VLAN.
show vlan	Displays the current VLAN configurations on the switch.

negotiation auto

Enable auto-negotiation on an interface.

Syntax negotiation auto

To disable auto-negotiation, enter no negotiation auto.

Defaults Enabled

Command Modes INTERFACE

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information The no negotiation auto command is only available if you first manually set the speed of a port to 10Mbits or 100Mbits.

The negotiation auto command provides a mode option for configuring an individual port to forced-master/forced slave once auto-negotiation is enabled

Figure 11-13. negotiation auto Master/Slave Example

```
FTOS(conf)# int tengig 0/0
FTOS(conf-if)#neg auto
FTOS(conf-if-autoneg)# ?

end                     Exit from configuration mode
exit                    Exit from autoneg configuration mode
mode                    Specify autoneg mode
no                      Negate a command or set its defaults
show                    Show autoneg configuration information
FTOS(conf-if-autoneg)#mode ?
forced-master           Force port to master mode
forced-slave            Force port to slave mode
FTOS(conf-if-autoneg)#
```

If the mode option is not used, the default setting is slave. If you do not configure forced-master or forced slave on a port, the port negotiates to either a master or a slave state. Port status is one of the following:

- Forced-master
- Force-slave
- Master
- Slave
- Auto-neg Error—typically indicates that both ends of the node are configured with forced-master or forced-slave.

△ **Caution:** Ensure that one end of your node is configured as forced-master and one is configured as forced-slave. If both are configured the same (that is forced-master or forced-slave), the show interfaces command will flap between an auto-neg-error and forced-master/slave states.

You can display master/slave settings with the show interfaces command.

Figure 11-14. Display Auto-negotiation Master/Slave Setting (partial)

```
FTOS#show interfaces configured
TenGigabitEthernet 13/18 is up, line protocol is up
Hardware is Dell Force10Eth, address is 00:01:e8:05:f7:fc
    Current address is 00:01:e8:05:f7:fc
Interface index is 474791997
Internet address is 1.1.1.1/24
MTU 1554 bytes, IP MTU 1500 bytes
LineSpeed 1000 Mbit, Mode full duplex, Master
ARP type: ARPA, ARP Timeout 04:00:00
Last clearing of "show interfaces" counters 00:12:42
Queueing strategy: fifo
Input Statistics:
...
```

Both sides of the link must have auto-negotiation enabled or disabled for the link to come up.

The following table details the possible speed and auto-negotiation combinations for a line between two 100/1000/10GB Base-T Ethernet interfaces.

Table 11-3. Auto-negotiation and Link Speed Combinations

Port 0	Port 1	Link Status between Port 1 and Port 2
auto-negotiation enabled***** speed 1000 or auto	auto-negotiation enabled***** speed 1000 or auto	Up at 1000 Mb/s
auto-negotiation enabled speed 100	auto-negotiation enabled speed 100	Up at 100 Mb/s
auto-negotiation disabled speed 100	auto-negotiation disabled speed 100	Up at 100 Mb/s
auto-negotiation disabled speed 100	auto-negotiation enabled speed 100	Down
auto-negotiation enabled***** speed 1000 or auto	auto-negotiation disabled speed 100	Down

***** You cannot disable auto-negotiation when the speed is set to 1000 or auto.

Related Commands

speed (for 1000/10000/auto interfaces)	Set the link speed to 1000, 10000, or auto-negotiate the speed.

show config (INTERFACE mode)

Displays the interface configuration.

Syntax show config

Command Modes INTERFACE

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example **Figure 11-15. show config Command Example for the INTERFACE Mode**

```
FTOS(conf-if)#show conf
!
interface TenGigabitEthernet 1/1
 no ip address
 switchport
 no shutdown
FTOS(conf-if)#
```

show config (from INTERFACE RANGE mode)

Displays the bulk configured interfaces (group).

Syntax show config

Command Modes CONFIGURATION INTERFACE (conf-if-range)

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example **Figure 11-16. show config (Bulk Configuration) Command Example**

```
FTOS(conf)#interface range tengigabitethernet 1/1 - 2
FTOS(conf-if-range-tengig-1/1-2)#show config
!
interface TenGigabitEthernet 1/1
 no ip address
 switchport
 no shutdown
!
interface TenGigabitEthernet 1/2
 no ip address
 switchport
 no shutdown
FTOS(conf-if-range-tengig-1/1-2)#
```

show config (from INTERFACE VLAN mode)

Displays the current configuration of the Default VLAN.

Syntax show config

Command Modes INTERFACE VLAN

Example **Figure 11-17. show config Command Example for the Default VLAN**

```
FTOS(conf-if-vl-1)#show config
!
interface Vlan 1
 description a
 no ip address
 mtu 2500
 shutdown
FTOS(conf-if-vl-1)#
```

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

show config (from PROTOCOL LLDP mode)

Displays the LLDP configuration.

Syntax show config

Command Modes PROTOCOL LLDP

Example

Figure 11-18. show config Command Example for a Selected VLAN

```
FTOS(conf-lldp)#show conf
!
protocol lldp
FTOS(conf-lldp)#
```

show interfaces

Displays information on a specific physical interface or virtual interface.

Syntax show interfaces *interface*

Parameters

interface	Enter one of the following keywords and slot/port or number information: • For the management interface on the stack-unit, enter the keyword managementethernet followed by slot/port information. The slot and port range is 0. • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information. • For a VLAN, enter the keyword vlan followed by a number from 1 to 4094. • For a Port Channel interface, enter the keyword port-channel followed by a number. Range: 1-128

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information Use this show interfaces command for details on a specific interface. Use the show interfaces stack-unit command for details on all interfaces on the designated stack unit.

On the M I/O Aggregator, the show interface output displays incorrect rate information details over time for link monitoring when the rate-interval is configured for 5 seconds. Dell Force10 recommends using higher rate-intervals such as 15 to 299 seconds to minimize the errors seen.

Note: In the CLI output, the power value will be rounded to a 3-digit value. For receive/transmit power that is less than 0.000, an snmp query will return the corresponding dbm value even though the CLI displays as 0.000.

Note: After the counters are cleared, the line-rate continues to increase until it reaches the maximum line rate. When the maximum line rate is reached, there will be no change in the line-rate.

Example

Figure 11-19. show interfaces Command Example for 10G Port

```
FTOS#show interfaces tengigabitethernet 2/0
TenGigabitEthernet 2/0 is up, line protocol is up
Hardware is Dell Force10Eth, address is 00:01:e8:05:f7:3a
Interface index is 100990998
Internet address is 213.121.22.45/28
MTU 1554 bytes, IP MTU 1500 bytes
LineSpeed 10000 Mbit
ARP type: ARPA, ARP Timeout 04:00:00
Last clearing of "show interfaces" counters 02:31:45
Queueing strategy: fifo
Input Statistics:
     0 packets, 0 bytes
     Input 0 IP Packets, 0 Vlans 0 MPLS
     0 64-byte pkts, 0 over 64-byte pkts, 0 over 127-byte pkts
     0 over 255-byte pkts, 0 over 511-byte pkts, 0 over 1023-byte pkts
     0 symbol errors, 0 runts, 0 giants, 0 throttles
     0 CRC, 0 IP Checksum, 0 overrun, 0 discarded
Output Statistics:
     1 packets, 64 bytes, 0 underruns
     0 Multicasts, 2 Broadcasts, 0 Unicasts
     0 IP Packets, 0 Vlans, 0 MPLS
     0 throttles, 0 discarded
Rate info (interval 299 seconds):
     Input 00.00 Mbits/sec,          0 packets/sec, 0.00% of line-rate
     Output 00.00 Mbits/sec,          0 packets/sec, 0.00% of line-rate
Time since last interface status change: 00:00:27
```

Table 11-4. Lines in show interfaces Command Example

Line	Description
TenGigabitEthernet 2/0...	Displays the interface's type, slot/port, and administrative and line protocol status.
Hardware is...	Displays the interface's hardware information and its assigned MAC address.
Interface index...	Displays the interface index number used by SNMP to identify the interface.
Internet address...	States whether an IP address is assigned to the interface. If one is, that address is displayed.
MTU 1554...	Displays link and IP MTU information. If the chassis is in Jumbo mode, this number can range from 576 to 9252.
LineSpeed	Displays the interface's line speed.
ARP type:...	Displays the ARP type and the ARP timeout value for the interface.
Last clearing...	Displays the time when the show interfaces counters where cleared.
Queuing strategy...	States the packet queuing strategy. FIFO means first in first out.

Table 11-4. Lines in show interfaces Command Example

Line	Description
Input Statistics:	Displays all the input statistics including: • Number of packets and bytes into the interface • Number of packets with IP headers and VLAN tagged headers. **Note:** The sum of the number of packets may not be as expected since a VLAN tagged IP packet counts as both a VLAN packet and an IP packet. • Packet size and the number of those packets inbound to the interface • Number of symbol errors, runts, giants, and throttles packets: symbol errors = number packets containing bad data. That is, the port MAC detected a physical coding error in the packet. runts = number of packets that are less than 64B giants = packets that are greater than the MTU size throttles = packets containing PAUSE frames • Number of CRC, IP Checksum, overrun, and discarded packets: CRC = packets with CRC/FCS errors IP Checksum = packets with IP Checksum errors overrun = number of packets discarded due to FIFO overrun conditions discarded = the sum of input symbol errors, runts, giants, CRC, IP Checksum, and overrun packets discarded without any processing
Output Statistics:	Displays output statistics sent out of the interface including: • Number of packets, bytes and underruns out of the interface packets = total number of packets bytes = total number of bytes underruns = number of packets with FIFO underrun conditions • Number of Multicast, Broadcast and Unicast packets: Multicasts = number of MAC multicast packets Broadcasts = number of MAC broadcast packets Unicasts = number of MAC unicast packets • Number of throttles and discards packets: throttles = packets containing PAUSE frames discarded = number of packets discarded without any processing
Rate information...	Estimate of the input and output traffic rate over a designated interval (30 to 299 seconds). Traffic rate is displayed in bits, packets per second, and percent of line rate.
Time since...	Elapsed time since the last interface status change (hh:mm:ss format).

Figure 11-20. show interfaces ManagementEthernet Command Example

```
FTOS#show interface managementethernet ?
0/0                    Management Ethernet interface number
FTOS#show interface managementethernet 0/0
ManagementEthernet 0/0 is up, line protocol is up
Hardware is DellForce10Eth, address is 00:1e:c9:f1:00:05
    Current address is 00:1e:c9:f1:00:05
Pluggable media not present
Interface index is 235159752
Internet address is 10.11.209.87/16
Mode of IP Address Assignment : MANUAL
DHCP Client-ID: mgmt001ec9f10005
Virtual-IP is not set
Virtual-IP IPv6 address is not set
MTU 1554 bytes, IP MTU 1500 bytes
LineSpeed 100 Mbit, Mode full duplex
ARP type: ARPA, ARP Timeout 04:00:00
Last clearing of "show interface" counters 5d4h57m
Queueing strategy: fifo
    Input 3448753 packets, 950008323 bytes, 3442163 multicast
    Received 0 errors, 0 discarded
    Output 4627 packets, 814226 bytes, 0 multicast
    Output 0 errors, 0 invalid protocol
```

Usage Information

The interface counter “over 1023-byte pkts” does not increment for packets in the range 9216 > x < 1023.

The Management port is enabled by default (no show tdr). If necessary, use the ip address command to assign an IP address to the Management port.

Related Commands

show interfaces configured	Displays any interface with a non-default configuration.
show interfaces port-channel	Displays information on all interfaces on a specific stack unit.
show interfaces switchport	Displays Layer 2 information about the interfaces.
show inventory	Displays the M I/O Aggregator type, components (including media), FTOS version including hardware identification numbers and configured protocols.
show ip interface	Displays Layer 3 information about the interfaces.
show memory	Displays the stack unit(s) status.
show interfaces status	Displays all interfaces configured using the interface range command.

show interfaces configured

Displays any interface with a non-default configuration.

Syntax show interfaces configured

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 11-21. show interfaces configured Command Example

```
FTOS#show interfaces configured
TenGigabitEthernet 1/1 is up, line protocol is down(error-disabled[UFD])
Hardware is DellForce10Eth, address is 00:01:e8:00:ab:01
    Current address is 00:01:e8:00:ab:01
Server Port AdminState is Down
Pluggable media not present
Interface index is 67703553
Internet address is not set
Mode of IP Address Assignment : NONE
DHCP Client-ID :tenG2580001e800ab01
MTU 12000 bytes, IP MTU 11982 bytes
LineSpeed auto
Flowcontrol rx off tx off
ARP type: ARPA, ARP Timeout 04:00:00
Last clearing of "show interface" counters 05:15:07
Queueing strategy: fifo
Input Statistics:
     0 packets, 0 bytes
     0 64-byte pkts, 0 over 64-byte pkts, 0 over 127-byte pkts
     0 over 255-byte pkts, 0 over 511-byte pkts, 0 over 1023-byte pkts
     0 Multicasts, 0 Broadcasts
     0 runts, 0 giants, 0 throttles
     0 CRC, 0 overrun, 0 discarded
Output Statistics:
     0 packets, 0 bytes, 0 underruns
     0 64-byte pkts, 0 over 64-byte pkts, 0 over 127-byte pkts
     0 over 255-byte pkts, 0 over 511-byte pkts, 0 over 1023-byte pkts
     0 Multicasts, 0 Broadcasts, 0 Unicasts
     0 throttles, 0 discarded, 0 collisions, 0 wreddrops
Rate info (interval 299 seconds):
     Input 00.00 Mbits/sec,          0 packets/sec, 0.00% of line-rate
     Output 00.00 Mbits/sec,          0 packets/sec, 0.00% of line-rate
Time since last interface status change: 05:14:12


TenGigabitEthernet 1/2 is up, line protocol is down(error-disabled[UFD])
FTOS#
```

show interfaces description

Displays the descriptions configured on the interface.

Syntax show interfaces [*interface*] description

Parameters

interface	Enter one of the following keywords and slot/port or number information: • For the management interface on the stack unit enter the keyword ManagementEthernet followed by the slot/port information. The slot range is 0-0 and the port range is 0. • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information. • For VLAN interfaces, enter the keyword vlan followed by a number from 1 to 4094.

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 11-22. show interfaces description Command Example

```
FTOS#show interface description
Interface                OK  Status     Protocol    Description
TenGigabitEthernet 0/1   NO  admin down down
TenGigabitEthernet 0/2   NO  admin down down
TenGigabitEthernet 0/3   NO  admin down down
TenGigabitEthernet 0/4   NO  admin down down
TenGigabitEthernet 0/5   NO  admin down down
TenGigabitEthernet 0/6   NO  admin down down
TenGigabitEthernet 0/7   NO  up          down
TenGigabitEthernet 0/8   YES up          up
TenGigabitEthernet 0/9   NO  admin down down
TenGigabitEthernet 0/10  NO  admin down down
TenGigabitEthernet 0/11  NO  admin down down
TenGigabitEthernet 0/12  NO  admin down down
TenGigabitEthernet 0/13  NO  admin down down
TenGigabitEthernet 0/14  NO  admin down down
TenGigabitEthernet 0/15  NO  admin down down
TenGigabitEthernet 0/16  YES up          up
TenGigabitEthernet 0/17  NO  admin down down
TenGigabitEthernet 0/18  NO  admin down down
TenGigabitEthernet 0/19  NO  admin down down
TenGigabitEthernet 0/20  NO  admin down down
TenGigabitEthernet 0/21  NO  admin down down
```

Table 11-5. show interfaces description Command Example Fields

Field	Description
Interface	Displays type of interface and associated slot and port number.
OK?	Indicates if the hardware is functioning properly.
Status	States whether the interface is enabled (up) or disabled (administratively down).
Protocol	States whether IP is enabled (up) or disabled (down) on the interface.
Description	Displays the description (if any) manually configured for the interface.

show interfaces port-channel

Displays information on configured Port Channel groups.

Syntax

show interfaces port-channel [*channel-number*] [brief | description]

Parameters

channel-number	For a Port Channel interface, enter the keyword port-channel followed by a number: Range: 1-128
brief	(OPTIONAL) Enter the keyword brief to display only the port channel number, the state of the port channel, and the number of interfaces in the port channel.
description	(OPTIONAL) Enter the keyword description to display interface information with description.

Command Modes

EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 11-23. show interfaces port-channel Command Example (EtherScale)

```
FTOS#show interfaces port-channel
Port-channel 1 is down, line protocol is down
Hardware address is 00:1e:c9:f1:00:05, Current address is 00:1e:c9:f1:00:05
Interface index is 1107755009
Minimum number of links to bring Port-channel up is 1
Internet address is not set
Mode of IP Address Assignment : NONE
DHCP Client-ID :lag1001ec9f10005
MTU 1554 bytes, IP MTU 1500 bytes
LineSpeed auto
Members in this channel:
ARP type: ARPA, ARP Timeout 04:00:00
Last clearing of "show interface" counters 03:28:00
Queueing strategy: fifo
Input Statistics:
     0 packets, 0 bytes
     0 64-byte pkts, 0 over 64-byte pkts, 0 over 127-byte pkts
     0 over 255-byte pkts, 0 over 511-byte pkts, 0 over 1023-byte pkts
     0 Multicasts, 0 Broadcasts
     0 runts, 0 giants, 0 throttles
     0 CRC, 0 overrun, 0 discarded
Output Statistics:
     0 packets, 0 bytes, 0 underruns
     0 64-byte pkts, 0 over 64-byte pkts, 0 over 127-byte pkts
     0 over 255-byte pkts, 0 over 511-byte pkts, 0 over 1023-byte pkts
     0 Multicasts, 0 Broadcasts, 0 Unicasts
     0 throttles, 0 discarded, 0 collisions
```

Table 11-6. show interfaces port-channel Command Example Fields

Field	Description
Port-Channel 1...	Displays the LAG's status. In the example, the status of the LAG's LAG fate-sharing group ("Failover-group") is listed.
Hardware is...	Displays the interface's hardware information and its assigned MAC address.
Port-channel is part...	Indicates whether the LAG is part of a LAG fate-sharing group ("Failover-group").
Internet address...	States whether an IP address is assigned to the interface. If one is, that address is displayed.
MTU 1554...	Displays link and IP MTU.
LineSpeed	Displays the interface's line speed. For a port channel interface, it is the line speed of the interfaces in the port channel.
Members in this...	Displays the interfaces belonging to this port channel.
ARP type:...	Displays the ARP type and the ARP timeout value for the interface.
Last clearing...	Displays the time when the show interfaces counters were cleared.
Queueing strategy.	States the packet queuing strategy. FIFO means first in first out.
packets input...	Displays the number of packets and bytes into the interface.
Input 0 IP packets...	Displays the number of packets with IP headers, VLAN tagged headers and MPLS headers. The number of packets may not add correctly because a VLAN tagged IP packet counts as both a VLAN packet and an IP packet.
0 64-byte...	Displays the size of packets and the number of those packets entering that interface. This information is displayed over two lines.
Received 0...	Displays the type and number of errors or other specific packets received. This information is displayed over three lines.

Input 0 IP packets...	Displays the number of packets with IP headers, VLAN tagged headers and MPLS headers. The number of packets may not add correctly because a VLAN tagged IP packet counts as both a VLAN packet and an IP packet.
0 64-byte...	Displays the size of packets and the number of those packets entering that interface. This information is displayed over two lines.
Received 0...	Displays the type and number of errors or other specific packets received. This information is displayed over three lines.

Figure 11-24. show interfaces port-channel brief Command Example

```
FTOS#show int po 1 brief
Codes: L - LACP Port-channel

     LAG  Mode  Status       Uptime      Ports
     1    L3    down         00:00:00    Te 0/16    (Down)
FTOS#
```

Related Commands

show lacp	Displays the LACP matrix.

show interfaces stack-unit

Displays information on all interfaces on a specific M I/O Aggregator stack member.

Syntax show interfaces stack-unit *unit-number*

Parameters

unit-number	Enter the stack member number (0 to 5).

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 11-25. show interfaces status Command Example

```
FTOS#show interfaces stack-unit 0
TenGigabitEthernet 0/1 is down, line protocol is down
Hardware is DellForce10Eth, address is 00:1e:c9:f1:00:05
    Current address is 00:1e:c9:f1:00:05
Server Port AdminState is Down
Pluggable media not present
Interface index is 34148609
Internet address is not set
Mode of IP Address Assignment : NONE
DHCP Client-ID :tenG130001ec9f10005
MTU 1554 bytes, IP MTU 1500 bytes
LineSpeed auto
Flowcontrol rx off tx off
ARP type: ARPA, ARP Timeout 04:00:00
Last clearing of "show interface" counters 5d5h24m
Queueing strategy: fifo
Input Statistics:
     0 packets, 0 bytes
     0 64-byte pkts, 0 over 64-byte pkts, 0 over 127-byte pkts
     0 over 255-byte pkts, 0 over 511-byte pkts, 0 over 1023-byte pkts
     0 Multicasts, 0 Broadcasts
     0 runts, 0 giants, 0 throttles
     0 CRC, 0 overrun, 0 discarded
Output Statistics:
     0 packets, 0 bytes, 0 underruns
     0 64-byte pkts, 0 over 64-byte pkts, 0 over 127-byte pkts
     0 over 255-byte pkts, 0 over 511-byte pkts, 0 over 1023-byte pkts
     0 Multicasts, 0 Broadcasts, 0 Unicasts
     0 throttles, 0 discarded, 0 collisions
Rate info (interval 299 seconds):
     Input 00.00 Mbits/sec,          0 packets/sec, 0.00% of line-rate
     Output 00.00 Mbits/sec,          0 packets/sec, 0.00% of line-rate
Time since last interface status change: 5d5h23m
!-------------output truncated ----------------!
```

Related Commands

show diag	Displays data plane and management plane input/output statistics.

show interfaces status

Displays a summary of interface information or specify a stack unit and interface to display status information for that specific interface only.

Syntax show interfaces [*interface* | stack-unit *unit-number*] status

Parameters

interface	(OPTIONAL) Enter one of the following keywords and slot/port or number information: • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information.

Defaults none

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 11-26. show interfaces status Command Example

```
FTOS#show interface status
Port     Description  Status Speed     Duplex Vlan
Te 0/1                Down   Auto      Auto   --
Te 0/2                Down   Auto      Auto   --
Te 0/3                Down   Auto      Auto   --
Te 0/4                Down   Auto      Auto   --
Te 0/5                Down   Auto      Auto   --
Te 0/6                Down   Auto      Auto   --
Te 0/7                Down   Auto      Auto   --
Te 0/8                Up     10000 Mbit Full   --
Te 0/9                Down   Auto      Auto   --
Te 0/10               Down   Auto      Auto   --
Te 0/11               Down   Auto      Auto   --
Te 0/12               Down   Auto      Auto   --
Te 0/13               Down   Auto      Auto   --
Te 0/14               Down   Auto      Auto   --
Te 0/15               Down   Auto      Auto   --
Te 0/16               Up     10000 Mbit Full   --
FTOS#
```

show interfaces switchport

Displays only virtual and physical interfaces in Layer 2 mode. This command displays the Layer 2 mode interfaces' IEEE 802.1Q tag status and VLAN membership.

Syntax show interfaces switchport [*interface* | stack-unit *unit-id*]

Parameters

interface	Enter one of the following keywords and slot/port or number information: • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information. • Enter the keyword backup to view the backup interface for this interface.
stack-unit *unit-id*	(OPTIONAL) Enter the keyword stack-unit followed by the stack member number. Range: 0 to 5

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 11-27. show interfaces switchport Command Example

```
FTOS#show interfaces switchport

Codes:  U - Untagged, T - Tagged
        x - Dot1x untagged, X - Dot1x tagged
        G - GVRP tagged, M - Trunk, H - VSN tagged
        i - Internal untagged, I - Internal tagged, v - VLT untagged, V - VLT
tagged

Name: TenGigabitEthernet 1/1
802.1QTagged: Hybrid
IO-AGG port mode: Auto VLANs enabled
Vlan membership:
Q       Vlans
U       1
T       2-4094

Native VlanId:    1.



Name: TenGigabitEthernet 1/2
802.1QTagged: Hybrid
IO-AGG port mode: Auto VLANs enabled
Vlan membership:
Q       Vlans
U       1
T       2-4094

Native VlanId:    1.
--More--
```

Table 11-8. Items in show interfaces switchport Command Example

Items	Description
Name	Displays the interface's type, slot and port number.
802.1QTagged	Displays whether if the VLAN tagged ("True"), untagged ("False"), or hybrid ("Hybrid"), which supports both untagged and tagged VLANs by port 13/0.
Vlan membership	Lists the VLANs to which the interface is a member. Starting with FTOS 7.6.1, this field can display native VLAN membership by port 13/0.

Related Commands

show ip interface	Displays Layer 3 information about the interfaces.

show range

Displays all interfaces configured using the group command.

Syntax show range

Command Mode INTERFACE RANGE (config-if-range)

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 11-28. show range Command Example

```
FTOS(conf-if-range-te-0/16)#show range
interface tengigabitethernet 0/16
FTOS(conf-if-range-te-0/16)#
```

Related Commands

show ip interface	Displays Layer 3 information about the interfaces.

show tdr

Displays the TDR test results.

Syntax show tdr *interface*

Parameters

interface	Enter the keyword TenGigabitEthernet followed by the slot/port information for the 100/1000/10GbaseT Ethernet interface.

Defaults none

Command Modes EXEC

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 11-29. show tdr tengigabitethernet Command Example

```
FTOS#show tdr tengigabitethernet 1/1
Time since last test: 00:00:02
  Pair A, Length: OK Status: Terminated
  Pair B, Length: 92 (+/- 1) meters, Status: Short
  Pair C, Length: 93 (+/- 1) meters, Status: Open
  Pair D, Length: 0 (+/- 1) meters, Status: Impedance Mismatch
```

Table 11-9. TDR Test Status

Status	Definition
OK Status: Terminated	TDR test is complete, no fault is detected on the cable, and the test is terminated
Length: 92 (+/- 1) meters, Status: Shorted	A short is detected on the cable. The location, in this example is 92 meters, of the short is accurate to plus or minus one meter.
Length: 93 (+/- 1) meters, Status: Open	An opening is detected on the cable. The location, in this example is 93 meters, of the open is accurate to plus or minus one meter.
Status: Impedance Mismatch	There is an impedance mismatch in the cables.

Usage Information

If the TDR test has not been run, an error messages is generated:

```
%Error: Please run the TDR test first
```

Note that TDR test is supported only on 10GbaseT interfaces.

Related Commands

vlan tagged	Runs the TDR test.

show vlan

Displays the current VLAN configurations on the switch.

Syntax

show vlan [brief | id *vlan-id* | name *vlan-name*]

Parameters

brief	(OPTIONAL) Enter the keyword brief to display the following information: • VLAN ID • VLAN name (left blank if none is configured.) • Spanning Tree Group ID • MAC address aging time • IP address
id *vlan-id*	(OPTIONAL) Enter the keyword id followed by a number from 1 to 4094. Only information on the VLAN specified is displayed.
name *vlan-name*	(OPTIONAL) Enter the keyword name followed by the name configured for the VLAN. Only information on the VLAN named is displayed.

Command Modes

EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 11-30. show vlan Command Example

```
FTOS#show vlan

Codes: * - Default VLAN, G - GVRP VLANs, R - Remote Port Mirroring VLANs, P -
Primary, C - Community, I - Isolated
Q: U - Untagged, T - Tagged
   x - Dot1x untagged, X - Dot1x tagged
   G - GVRP tagged, M - Vlan-stack, H - VSN tagged
   i - Internal untagged, I - Internal tagged, v - VLT untagged, V - VLT tagged

    NUM    Status    Description                    Q Ports
    1      Inactive  a
    2      Inactive
*   20     Active                                   U Te 0/3,5,13,53-56
    1002   Active                                   T Te 0/3,13,55-56
FTOS#
```

Table 11-10. show vlan Command Information

Column Heading	Description
(Column 1 — no heading)	asterisk symbol (*) = Default VLAN G = GVRP VLAN P = primary VLAN C = community VLAN I = isolated VLAN
NUM	Displays existing VLAN IDs.

Table 11-10. show vlan Command Information

Column Heading	Description
Status	Displays the word `Inactive` for inactive VLANs and the word `Active` for active VLANs.
Q	Displays `G` for GVRP tagged, `M` for member of a VLAN-Stack VLAN, `T` for tagged interface, `U` (for untagged interface), `x` (uncapitalized x) for Dot1x untagged, or `X` (capitalized X) for Dot1x tagged.
Ports	Displays the type, slot, and port information. For the type, `Po` = port channel, `Fo`= fortygigabit ethernet, and `Te` = ten gigabit ethernet.

Figure 11-31. show vlan id Command Example

```
FTOS# show vlan id 40

Codes: * - Default VLAN, G - GVRP VLANs, R - Remote Port Mirroring
VLANs, P - Primary, C - Community, I - Isolated
Q: U - Untagged, T - Tagged
   x - Dot1x untagged, X - Dot1x tagged
   G - GVRP tagged, M - Vlan-stack, H - VSN tagged
   i - Internal untagged, I - Internal tagged, v - VLT untagged, V
- VLT tagged

    NUM    Status    Description                    Q Ports
    1      Inactive  a
FTOS#
```

Figure 11-32. show vlan brief Command Example

```
FTOS#show vlan brief
VLAN Name                              STG   MAC Aging IP Address
---- --------------------------------- ----  --------- ------------------
1                                      0     0         unassigned
2                                      0     0         unassigned
20                                     0     0         unassigned
1002                                   0     0         unassigned
FTOS#
```

Figure 11-33. Using a VLAN Name Example

```
FTOSconf)#interface vlan 222
FTOS(conf-if-vl-222)#name test
FTOS(conf-if-vl-222)#do show vlan name test

Codes: * - Default VLAN, G - GVRP VLANs
Q: U - Untagged, T - Tagged
   x - Dot1x untagged, X - Dot1x tagged
   G - GVRP tagged, M - Vlan-stack

    NUM    Status    Description                    Q Ports
    222    Inactive                                 U TenGig 1/22
FTOS(conf-if-vl-222)#
FTOS#
```

Related Commands

interface vlan	Configures a VLAN.

shutdown

Disable an interface.

Syntax

shutdown

To activate an interface, enter no shutdown.

Defaults

The interface is disabled.

Command Modes

INTERFACE

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

The show tdr command marks a physical interface as unavailable for traffic. To discover if an interface is disabled, use the show ip interface command. Disabled interfaces are listed as down.

Disabling a VLAN or a port channel causes different behavior. When a VLAN is disabled, the Layer 3 functions within that VLAN are disabled. Layer 2 traffic continues to flow. Entering the show tdr command on a port channel disables all traffic on the port channel and the individual interfaces within the port channel. To enable a port channel, you must enter no show tdr on the port channel interface and at least one interface within that port channel.

The show tdr and description commands are the only commands that you can configure on an interface that is a member of a port channel.

Related Commands

vlan tagged	Test the condition of copper cables on 100/1000/10G Base-T modules.
interface vlan	Creates a VLAN.
show ip interface	Displays the interface routing status. Add the keyword brief to display a table of interfaces and their status.

speed (for 1000/10000/auto interfaces)

Set the speed for 1000/10000 Base-T Ethernet interfaces. Both sides of a link must be set to the same speed (1000/10000) or to auto or the link may not come up.

Syntax

speed {1000 | 10000 | auto}

To return to the default setting, use the no speed {1000 | 10000 | auto} command.

Parameters

1000	Enter the keyword 1000 to set the interface's speed to 1000 Mb/s.
10000	Enter the keyword 10000 to set the interface's speed to 10000 Mb/s. (Auto-negotiation is enabled. See name for more information)
auto	Enter the keyword auto to set the interface to auto-negotiate its speed. (Auto-negotiation is enabled. See name for more information)

Defaults

auto

Command Modes INTERFACE

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information This command is found on the 1000/10000 Base-T Ethernet interfaces.

When you enable auto, the system performs and automatic discovery to determine the optics installed and configure the appropriate speed.

When you configure a speed for the 1000/10000 interface, you should confirm name command setting. Both sides of the link should have auto-negotiation either enabled or disabled. For speed settings of 1000 or auto, the software sets the link to auto-negotiation and you cannot change that setting.

In FTOS, the command **speed 1000** is an exact equivalent of **speed auto 1000** in IOS.

Related Commands

name	Enables or disables auto-negotiation on an interface.

tdr-cable-test

Test the condition of copper cables on 100/1000/10GBase-T modules.

Syntax **tdr-cable-test interface**

Parameters

interface	Enter the keyword TenGigabitEthernet followed by the slot/port information for the 100/1000/10GBase-T Ethernet interface.

Defaults none

Command Modes EXEC

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information The interface must be enabled to run the test or an error message is generated:

```
FTOS#tdr-cable-test tengigabitethernet 5/2

%Error: Interface is disabled TenGIG 5/2
```

Related Commands

show tdr	Displays the results of the TDR test.

vlan tagged

CMC

Add a Layer 2 interface to a VLAN as a tagged interface.

Syntax

tagged *interface*

To remove a tagged interface from a VLAN, use no tagged *interface* command.

Parameters

interface	Enter the following keywords and slot/port or number information: • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information.

Defaults

All interfaces in Layer 2 mode are untagged.

Command Modes

INTERFACE VLAN

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

When you use the no tagged command, the interface is automatically placed in the default VLAN as an untagged interface unless the interface is a member of another VLAN. If the interface belongs to several VLANs, you must remove it from all VLANs to change it to an untagged interface.

Tagged interfaces can belong to multiple VLANs, while untagged interfaces can only belong to one VLAN at a time.

When two or more ports configured for VLANs form a LAG, the resulting LAG is a tagged member of all the configured VLANs and an untagged member of the VLAN to which the port with the lowest port ID belongs.

For example, if port 0/33 is an untagged member of VLAN 2 and port 0/41 is an untagged member of VLAN 3, the resulting LAG consisting of the two ports is an untagged member of VLAN 2 and a tagged member of VLANs 2 and 3.

Example

Figure 11-34. VLAN Tagged Command Example

```
FTOS(conf-if-te-0/2)#vlan tagged ?
VLAN-RANGE              Comma/Hyphen separated VLAN ID set
FTOS(conf-if-te-0/2)#vlan tagged 2,3-4
FTOS(conf-if-te-0/2)#show config
!
interface TenGigabitEthernet 0/2
 mtu 12000
 vlan tagged 2-4
!
 port-channel-protocol LACP
  port-channel 1 mode active
!
 protocol lldp
  advertise management-tlv system-name
  dcbx port-role auto-downstream
 no shutdown
FTOS(conf-if-te-0/2)#
```

Related Commands

interface vlan	Configures a VLAN.
vlan untagged	Specifies which interfaces in a VLAN are untagged.

vlan untagged

CMC

Add a Layer 2 interface to a VLAN as an untagged interface.

Syntax

untagged *interface*

To remove an untagged interface from a VLAN, use the no untagged *interface* command.

Parameters

interface	Enter the following keywords and slot/port or number information: • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information.

Defaults

All interfaces in Layer 2 mode are untagged.

Command Modes

INTERFACE VLAN

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

Untagged interfaces can only belong to one VLAN.

In the default VLAN, you cannot use the no untagged *interface* command. To remove an untagged interface from all VLANs, including the default VLAN, enter INTERFACE mode and use the no vlan tagged command.

When two or more ports configured for VLANs form a LAG, the resulting LAG is a tagged member of all the configured VLANs and an untagged member of the VLAN to which the port with the lowest port ID belongs.

For example, if port 0/33 is an untagged member of VLAN 2 and port 0/41 is an untagged member of VLAN 3, the resulting LAG consisting of the two ports is an untagged member of VLAN 2 and a tagged member of VLANs 2 and 3.

Example

Figure 11-35. VLAN Untagged Command Example

```
FTOS(conf-if-te-0/2)#vlan untagged ?
<1-4094>               Untagged VLAN id
FTOS(conf-if-te-0/2)#
FTOS(conf-if-te-0/2)#vlan untagged 4094
FTOS(conf-if-te-0/2)#show config
!
interface TenGigabitEthernet 0/2
 mtu 12000
 vlan untagged 4094
!
 port-channel-protocol LACP
  port-channel 1 mode active
!
 protocol lldp
  advertise management-tlv system-name
  dcbx port-role auto-downstream
 no shutdown
FTOS(conf-if-te-0/2)#
```

Related Commands

interface vlan	Configures a VLAN.
vlan tagged	Specifies which interfaces in a VLAN are tagged.

12

IPv4 Routing

IP Commands

This chapter describes the IPv4-related commands. They are:

- clear tcp statistics
- debug ip dhcp
- debug ip icmp
- ip route
- management route
- show arp
- show hosts
- show ip management-route
- show ip multicast-cam stack-unit
- show ip interface
- show ip route
- show ip route summary
- show ip management-route

clear tcp statistics

Clear the TCP counters.

Syntax clear tcp statistics

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

debug ip dhcp

Enable debug information for DHCP relay transactions and display the information on the console.

Syntax debug ip dhcp

To disable debug, use the no debug ip dhcp command.

Defaults Debug disabled

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example **Figure 12-1. debug ip dhcp Command Example**

```
FTOS#debug ip dhcp
00:12:21 : %RELAY-I-PACKET: BOOTP REQUEST (Unicast) received at interface 113.3.3.17 BOOTP
Request, hops = 0, XID = 0xbf05140f, secs = 0, hwaddr = 00:60:CF:20:7B:8C, giaddr = 0.0.0.0
00:12:21 : %RELAY-I-BOOTREQUEST: Forwarded BOOTREQUEST for 00:60:CF:20:7B:8C to 14.4.4.2
00:12:26 : %RELAY-I-PACKET: BOOTP REQUEST (Unicast) received at interface 113.3.3.17 BOOTP
Request, hops = 0, XID = 0xbf05140f, secs = 5, hwaddr = 00:60:CF:20:7B:8C, giaddr = 0.0.0.0
00:12:26 : %RELAY-I-BOOTREQUEST: Forwarded BOOTREQUEST for 00:60:CF:20:7B:8C to 14.4.4.2
00:12:40 : %RELAY-I-PACKET: BOOTP REQUEST (Unicast) received at interface 113.3.3.17 BOOTP
Request, hops = 0, XID = 0xda4f9503, secs = 0, hwaddr = 00:60:CF:20:7B:8C, giaddr = 0.0.0.0
00:12:40 : %RELAY-I-BOOTREQUEST: Forwarded BOOTREQUEST for 00:60:CF:20:7B:8C to 14.4.4.2
00:12:42 : %RELAY-I-PACKET: BOOTP REPLY (Unicast) received at interface 14.4.4.1 BOOTP Reply,
hops = 0, XID = 0xda4f9503, secs = 0, hwaddr = 00:60:CF:20:7B:8C, giaddr = 113.3.3.17
00:12:42 : %RELAY-I-BOOTREPLY: Forwarded BOOTREPLY for 00:60:CF:20:7B:8C to 113.3.3.254
00:12:42 : %RELAY-I-PACKET: BOOTP REQUEST (Unicast) received at interface 113.3.3.17 BOOTP
Request, hops = 0, XID = 0xda4f9503, secs = 0, hwaddr = 00:60:CF:20:7B:8C, giaddr = 0.0.0.0
00:12:42 : %RELAY-I-BOOTREQUEST: Forwarded BOOTREQUEST for 00:60:CF:20:7B:8C to 14.4.4.2
00:12:42 : %RELAY-I-PACKET: BOOTP REPLY (Unicast) received at interface 14.4.4.1 BOOTP Reply,
hops = 0, XID = 0xda4f9503, secs = 0, hwaddr = 00:60:CF:20:7B:8C, giaddr = 113.3.3.17
00:12:42 : %RELAY-I-BOOTREPLY: Forwarded BOOTREPLY for 00:60:CF:20:7B:8C to 113.3.3.254
FTOS#
```

debug ip icmp

View information on the internal control message protocol (ICMP).

Syntax debug ip icmp [*interface*] [count *value*]

To disable debugging, use the no debug ip icmp command.

Parameters

interface	(OPTIONAL) Enter the following keywords and slot/port or number information: • For the Management interface, enter the keyword ManagementEthernet followed by the slot/port information. The slot range is 0 and the port range is 0. • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information. • For VLAN, enter the keyword vlan followed by a number from 1 to 4094.
count *value*	(OPTIONAL) Enter the keyword count followed by the count value. Range: 1 to 65534 Default: Infinity

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 12-2. debug ip icmp Command Example (Partial)

```
ICMP: echo request rcvd from src 40.40.40.40
ICMP: src 40.40.40.40, dst 40.40.40.40, echo reply
ICMP: src 40.40.40.40, dst 40.40.40.40, echo reply
ICMP: echo request sent to dst 40.40.40.40
ICMP: echo request rcvd from src 40.40.40.40
ICMP: src 40.40.40.40, dst 40.40.40.40, echo reply
ICMP: src 40.40.40.40, dst 40.40.40.40, echo reply
ICMP: echo request sent to dst 40.40.40.40
```

Usage Information

Use the count option to stop packets from flooding the user terminal when debugging is turned on.

ip route

Assign a static route to the switch.

Syntax

ip route *destination mask* {*ip-address* | *interface* [*ip-address*]} [*distance*] [permanent] [tag *tag-value*]

To delete a specific static route, use the no ip route *destination mask* {*address* | *interface* [*ip-address*]} command.

To delete all routes matching a certain route, use the no ip route *destination mask* command.

Parameters

destination	Enter the IP address in dotted decimal format of the destination device.
mask	Enter the mask in slash prefix formation (/x) of the destination device's IP address.
ip-address	Enter the IP address in dotted decimal format of the forwarding router.
interface	Enter the following keywords and slot/port or number information: • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information. • For a VLAN, enter the keyword vlan followed by a number from 1 to 4094.
distance	(OPTIONAL) Enter a number as the distance metric assigned to the route. Range: 1 to 255
permanent	(OPTIONAL) Enter the keyword permanent to specify the route is not removed, even if the interface assigned to that route goes down. The route must be up initially to install it in the routing table. If you disable the interface with an IP address associated with the keyword permanent, the route disappears from the routing table.
tag *tag-value*	(OPTIONAL) Enter the keyword tag followed by a number to assign to the route. Range: 1 to 4294967295

Defaults

Not configured.

Command Modes

CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

Using the following example of a static route:
ip route 33.33.33.0 /24 tengigabitethernet 0/0 172.31.5.43

- The software installs a next hop that is not on the directly connected subnet but which recursively resolves to a next hop on the interface's configured subnet. In the example, if gig 0/0 has ip address on subnet 2.2.2.0 and if 172.31.5.43 recursively resolves to 2.2.2.0, FTOS installs the static route.
- When the interface goes down, FTOS withdraws the route.
- When the interface comes up, FTOS re-installs the route.
- When recursive resolution is "broken," FTOS withdraws the route.
- When recursive resolution is satisfied, FTOS re-installs the route.

Related Commands

show ip route	Views the switch routing table.

management route

Configure a static route that points to the Management interface or a forwarding router.

Syntax

management route {*ipv4-address*}*/mask* {*forwarding-router-address* | managementethernet}

Parameters

{*ipv4-address*}*/mask*	Enter an IPv4 address (A.B.C.D) followed by the prefix-length for the IP address of the management interface.
forwarding-router-address	Enter an IPv4 address of a forwarding router.
managementethernet	Enter the keyword managementethernet for the Management interface.

Defaults

Not configured.

Command Modes

CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

When a static route (or a protocol route) overlaps with Management static route, the static route (or a protocol route) is preferred over the Management Static route. Also, Management static routes and the Management Connected prefix are not reflected in the hardware routing tables. Separate routing tables are maintained for IPv4 management routes. This command manages both tables.

show hosts

View the host table and DNS configuration.

Syntax

show hosts

Command Modes

EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 12-3. show hosts Command Example

```
FTOS#show hosts
Default domain is not set
Name/address lookup uses static mappings
Name servers are not set
Host                    Flags      TTL    Type   Address
--------                -----      ----   ----   -------
ks                      (perm, OK) -       IP    2.2.2.2
4200-1                  (perm, OK) -       IP    192.68.69.2
1230-3                  (perm, OK) -       IP    192.68.99.2
ZZr                     (perm, OK) -       IP    192.71.18.2
Z10-3                   (perm, OK) -       IP    192.71.23.1
FTOS#
```

Table 12-1. show hosts Command Example Fields

Field	Description
Default domain...	Displays the domain name (if configured).
Name/address lookup...	States if DNS is enabled on the system. If DNS is enabled, the Name/Address lookup is domain service. If DNS is not enabled, the Name/Address lookup is static mapping.
Name servers are...	Lists the name servers, if configured.
Host	Displays the host name assigned to the IP address.
Flags	Classifies the entry as one of the following: • perm - the entry was manually configured and will not time out • temp - the entry was learned and will time out after 72 hours of inactivity. Also included in the flag is an indication of the validity of the route: • ok - the entry is valid. • ex - the entry expired. • ?? - the entry is suspect.
TTL	Displays the amount of time until the entry ages out of the cache. For dynamically learnt entries only.
Type	Displays IP as the type of entry.
Address	Displays the IP address(es) assigned to the host.

show arp

Displays the ARP table.

Syntax show arp [interface *interface* | ip *ip-address* [*mask*] | macaddress *mac-address* [*mac-address mask*]] [static | dynamic] [summary]

Parameters

interface *interface*	(OPTIONAL) Enter the following keywords and slot/port or number information: • For the Management interface, enter the keyword managementethernet followed by the slot/port information. • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information. • For a VLAN, enter the keyword vlan followed by a number from 1 to 4094.
ip *ip-address mask*	(OPTIONAL) Enter the keyword ip followed by an IP address in the dotted decimal format. Enter the optional IP address mask in the slash prefix format (/x).
macaddress *mac-address mask*	(OPTIONAL) Enter the keyword macaddress followed by a MAC address in nn:nn:nn:nn:nn:nn format. Enter the optional MAC address mask in nn:nn:nn:nn:nn format also.
static	(OPTIONAL) Enter the keyword static to view entries entered manually.
dynamic	(OPTIONAL) Enter the keyword dynamic to view dynamic entries.
summary	(OPTIONAL) Enter the keyword summary to view a summary of ARP entries.
retries	(OPTIONAL) Enter the keyword summary to view the number of ARP retries before a 20 sec back off.
inspection	(OPTIONAL) Enter the keyword inspection to view dynamic ARP Inspection details.

Command Modes

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 12-4. show arp Command Example (Partial)

```
FTOS>show arp

Protocol    Address         Age(min)  Hardware Address Interface  VLAN CPU
--------------------------------------------------------------------------------
--------
Internet    10.11.8.6      167  00:01:e9:45:00:03      Ma 0/0      -    CP
Internet    10.11.68.14    124  00:01:e9:45:00:03      Ma 0/0      -    CP
Internet    10.11.209.254   0   00:01:e9:45:00:03      Ma 0/0      -    CP
```

Figure 12-5. show arp Command Example with Private VLAN data

```
FTOS#show arp

Protocol    Address         Age(min)  Hardware Address    Interface  VLAN      CPU
--------------------------------------------------------------------------------
Internet    5.5.5.1             -   00:01:e8:43:96:5e      -       Vl 10 pv 200   CP
Internet    5.5.5.10            -   00:01:e8:44:99:55      -       Vl 10          CP
Internet    10.1.2.4            1   00:01:e8:d5:9e:e2   Ma 0/0      -           CP
Internet    10.10.10.4          1   00:01:e8:d5:9e:e2   Ma 0/0      -           CP
Internet    10.16.127.53        1   00:01:e8:d5:9e:e2   Ma 0/0      -           CP
Internet    10.16.134.254      20   00:01:e8:d5:9e:e2   Ma 0/0      -           CP
Internet    133.33.33.4         1   00:01:e8:d5:9e:e2   Ma 0/0      -           CP
```

Line 1 shows community VLAN 200 (in primary VLAN 10) in a PVLAN.

Line 2 shows primary VLAN 10.

Table 12-2. show arp Command Example Fields

Row Heading	Description
Protocol	Displays the protocol type.
Address	Displays the IP address of the ARP entry.
Age(min)	Displays the age in minutes of the ARP entry.
Hardware Address	Displays the MAC address associated with the ARP entry.
Interface	Displays the first two letters of the interfaces type and the slot/port associated with the ARP entry.
VLAN	Displays the VLAN ID, if any, associated with the ARP entry.
CPU	Lists which CPU the entries are stored on.

Figure 12-6. show arp summary Command Example

```
FTOS#show arp summary

Total Entries    Static Entries   Dynamic Entries   CPU
-----------------------------------------------------------
3                0                3                 CP
FTOS#
```

Table 12-3. show arp summary Command Example Fields

Row Heading	Description
Total Entries	Lists the total number of ARP entries in the ARP table.
Static Entries	Lists the total number of configured or static ARP entries.
Dynamic Entries	Lists the total number of learned or dynamic ARP entries.
CPU	Lists which CPU the entries are stored on.

show ip management-route

View the IP addresses assigned to the Management interface.

Syntax show ip management-route [all | connected | summary | static]

Parameters

all	(OPTIONAL) Enter the keyword all to view all IP addresses assigned to all Management interfaces on the switch.
connected	(OPTIONAL) Enter the keyword connected to view only routes directly connected to the Management interface.
summary	(OPTIONAL) Enter the keyword summary to view a table listing the number of active and non-active routes and their sources.
static	(OPTIONAL) Enter the keyword static to view non-active routes also.

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 12-7. show ip management route Command Example

```
FTOS#show ip management-route

Destination         Gateway                     State
-----------         -------                     -----
10.1.2.0/24         ManagementEthernet 0/0      Connected
172.16.1.0/24       10.1.2.4                    Active

FTOS#
```

show ip multicast-cam stack-unit

Displays content-addressable memory (CAM) entries.

Syntax show ip multicast-cam stack-unit *0-5* port-set *pipe-number* [*ip-address mask* [longer-prefixes] | detail | member-info | summary]

Parameters

0-5	Enter the stack-unit ID, from 0 to 5.
pipe-number	Enter the number of the Port-Pipe number. Range: 0 to 0
ip-address mask [longer-prefix]	(OPTIONAL) Enter the IP address and mask of a route to CAM entries for that route only. Enter the keyword longer-prefixes to view routes with a common prefix.
detail	Enter the keyword detail to display the group index ID used by the ecmp routes in the CAM.

member-info	Enter the keyword member-info to display the group index used by the ecmp, the number of egress ports (members) for the ecmp, and the port details of each member. The detail information under member-info will give the MAC address, VLAN ID and gateway of every member port of the ecmp.
summary	(OPTIONAL) Enter the keyword summary to view a table listing route prefixes and the total number routes which can be entered in to CAM.

Command Modes

EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 12-8. show ip cam stack-unit Command Example

```
FTOS#show ip multicast-cam stack-unit 0 port-set 0 10.10.10.10/32
longer-prefixes

Destination     EC CG V C  VId     Mac-Addr          Port

-----------------  -- -- - - ----- ----------------- -------------
10.10.10.10         0  0 1 1     0 00:00:00:00:00:00   3f01   CP

FTOS#
```

Table 12-4. show ip cam Command Example Fields

Field	Description
Destination	Displays the destination route of the index.
CG	Displays 0.
V	Displays a 1 if the entry is valid and a 0 otherwise.
C	Displays the CPU bit. 1 indicates that a packet hitting this entry is forwarded to the control processor, depending on Egress port.
V Id	Displays the VLAN ID. If the entry is 0, the entry is not part of a VLAN.
Mac Addr	Displays the next-hop router's MAC address.
Port	Displays the egress interface. Use the second half of the entry to determine the interface. For example, in the entry 17cl CP, the CP is the pertinent portion. CP = control processor Fo= 40 Gigabit Ethernet interface Te = 10 Gigabit Ethernet interface

show ip interface

View IP-related information on all interfaces.

Syntax show ip interface [*interface* | brief] [configuration]

Parameter

interface	(OPTIONAL) Enter the following keywords and slot/port or number information: • For the Management interface, enter the keyword ManagementEthernet followed by zero (0). • For a Port Channel interface, enter the keyword port-channel followed by a number: Range: 1 to 128 • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information. • For a VLAN, enter the keyword vlan followed by a number from 1 to 4094.
brief	(OPTIONAL) Enter the keyword brief to view a brief summary of the interfaces and whether an IP address is assigned.
configuration	(OPTIONAL) Enter the keyword configuration to display the physical interfaces with non-default configurations only.

Command Modes

EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 12-9. show ip interface Command Example

```
FTOS#show ip int te 0/0
TenGigabitEthernet 0/0 is down, line protocol is down
Internet address is not set
IP MTU is 1500 bytes
Inbound  access list is not set
Proxy ARP is enabled
Split Horizon is enabled
Poison Reverse is disabled
ICMP redirects are not sent
ICMP unreachables are not sent


FTOS#
```

Table 12-5. show ip interface Command Example Items

Lines	Description
TenGigabitEthernet 0/0...	Displays the interface's type, slot/port and physical and line protocol status.
Internet address...	States whether an IP address is assigned to the interface. If one is, that address is displayed.
IP MTU is...	Displays IP MTU value.
Inbound access...	Displays the name of the any configured incoming access list. If none is configured, the phrase "not set" is displayed.
Proxy ARP...	States whether proxy ARP is enabled on the interface.
Split horizon...	States whether split horizon for RIP is enabled on the interface.
Poison Reverse...	States whether poison for RIP is enabled on the interface
ICMP redirects...	States if ICMP redirects are sent.
ICMP unreachables...	States if ICMP unreachable messages are sent.

Figure 12-10. show ip interface brief Command Example (Partial)

```
FTOS#show ip int brief
Interface              IP-Address      OK? Method Status                Protocol
TenGigabitEthernet 0/1   unassigned      NO  None   up                    down
TenGigabitEthernet 0/2   unassigned      YES None   up                    up
TenGigabitEthernet 0/3   unassigned      YES None   up                    up
TenGigabitEthernet 0/4   unassigned      NO  None   up                    down
TenGigabitEthernet 0/5   unassigned      NO  None   up                    down
TenGigabitEthernet 0/6   unassigned      NO  None   up                    down
TenGigabitEthernet 0/7   unassigned      NO  None   up                    down
TenGigabitEthernet 0/8   unassigned      NO  None   up                    down
TenGigabitEthernet 0/9   unassigned      NO  None   up                    down
```

Table 12-6. show ip interface brief Column Headings

Field	Description
Interface	Displays type of interface and the associated slot and port number.
IP-Address	Displays the IP address for the interface, if configured.
Ok?	Indicates if the hardware is functioning properly.
Method	Displays `Manual` if the configuration is read from the saved configuration.
Status	States whether the interface is enabled (`up`) or disabled (`administratively down`).
Protocol	States whether IP is enabled (`up`) or disabled (`down`) on the interface.

show ip route

View information, including how they were learned, about the IP routes on the switch.

Syntax show ip route *[hostname* | *ip-address* [*mask*] [longer-prefixes] | list *prefix-list* [*process-id*] | connected | static | summary]

Parameter

ip-address	(OPTIONAL) Specify a name of a device or the IP address of the device to view more detailed information about the route.
mask	(OPTIONAL) Specify the network mask of the route. Use this parameter with the IP address parameter.
longer-prefixes	(OPTIONAL) Enter the keyword longer-prefixes to view all routes with a common prefix.
list *prefix-list*	(OPTIONAL) Enter the keyword list and the name of a configured prefix list.
process-id	(OPTIONAL) Specify that only OSPF routes with a certain process ID must be displayed.
connected	(OPTIONAL) Enter the keyword connected to view only the directly connected routes.
static	(OPTIONAL) Enter the keyword static to view only routes configured by the ip route command.
summary	(OPTIONAL) Enter the keyword summary. See show ip route summary.

Command Modes

EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 12-11. show ip route summary and show ip route static Command Examples

```
FTOS#show ip route summary

Route Source              Active Routes   Non-active Routes
connected                 2               0
static                    1               0
Total                     3               0
Total 3 active route(s) using 612 bytes
FTOS#show ip route static ?
|                       Pipe through a command
<cr>
FTOS#show ip route static
       Destination        Gateway                      Dist/Metric Last Change
       -----------        -------                      ----------- -----------
 *S    0.0.0.0/0          via 10.10.91.9, Te 1/2              1/0        3d2h
FTOS#
```

Table 12-7. show ip route all Command Example Fields

Field	Description
(undefined)	Identifies the type of route: • C = connected • S = static • R = RIP • B = BGP • IN = internal BGP • EX = external BGP • LO = Locally Originated • O = OSPF • IA = OSPF inter area • N1 = OSPF NSSA external type 1 • N2 = OSPF NSSA external type 2 • E1 = OSPF external type 1 • E2 = OSPF external type 2 • i = IS-IS • L1 = IS-IS level-1 • L2 = IS-IS level-2 • IA = IS-IS inter-area • * = candidate default • > = non-active route • + = summary routes
Destination	Identifies the route's destination IP address.
Gateway	Identifies whether the route is directly connected and on which interface the route is configured.
Dist/Metric	Identifies if the route has a specified distance or metric.
Last Change	Identifies when the route was last changed or configured.

show ip route summary

View a table summarizing the IP routes in the switch.

Syntax show ip route summary

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 12-12. show ip route summary Command Example

```
FTOS>show ip route summary

Route Source    Active Routes   Non-active Routes
connected       17              0
static          3               0
ospf 100        1368            2
  Intra-area: 762 Inter-area: 1 External-1: 600 External-2: 5
Total           1388            2
Total 1388 active route(s) using 222440 bytes
Total 2 non-active route(s) using 128 bytes
FTOS>
```

Table 12-8. show ip route summary Column Headings

Column Heading	Description
Route Source	Identifies how the route is configured in FTOS.
Active Routes	Identifies the best route if a route is learned from two protocol sources.
Non-active Routes	Identifies the back-up routes when a route is learned by two different protocols. If the best route or active route goes down, the non-active route will become the best route.
ospf 100	If routing protocols (OSPF, RIP) are configured and routes are advertised, then information on those routes is displayed.
Total 1388 active...	Displays the number of active and non-active routes and the memory usage of those routes. If there are no routes configured in the FTOS, this line does not appear.

Related Commands

show ip route	Displays information about the routes found in switch.

show tcp statistics

View information on TCP traffic through the switch.

Syntax show tcp statistics

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example **Figure 12-13. show tcp statistics cp Command Example**

```
FTOS#show tcp statistics

Rcvd: 9849 Total, 0 no port
   0 checksum error, 0 bad offset, 0 too short
   5735 packets (7919 bytes) in sequence
   20 dup packets (2 bytes)
   0 partially dup packets (0 bytes)
   1 out-of-order packets (0 bytes)
   0 packets ( 0 bytes) with data after window
   0 packets after close
   0 window probe packets, 0 window update packets
   0 dup ack packets, 0 ack packets with unsend data
   6671 ack packets (152813 bytes)
Sent: 6778 Total, 0 urgent packets
   7 control packets
   6674 data packets (152822 bytes)
   12 data packets (1222 bytes) retransmitted
   85 ack only packets (5677 delayed)
   0 window probe packets, 0 window update packets
0 Connections initiated, 7 connections accepted, 7 connections established
8 Connections closed (including 4 dropped, 0 embryonic dropped)
12 Total rxmt timeout, 1 connections dropped in rxmt timeout
26 Keepalive timeout, 25 keepalive probe, 1 Connections dropped in keepalive
FTOS#
```

Table 12-9. show tcp statistics cp Command Example Fields

Field	Description
Rcvd:	Displays the number and types of TCP packets received by the switch. • Total = total packets received • no port = number of packets received with no designated port.
0 checksum error...	Displays the number of packets received with the following: • checksum errors • bad offset to data • too short
329 packets...	Displays the number of packets and bytes received in sequence.
17 dup...	Displays the number of duplicate packets and bytes received.
0 partially...	Displays the number of partially duplicated packets and bytes received.
7 out-of-order...	Displays the number of packets and bytes received out of order.
0 packets with data after window	Displays the number of packets and bytes received that exceed the switch's window size.
0 packets after close	Displays the number of packet received after the TCP connection was closed.
0 window probe packets...	Displays the number of window probe and update packets received.
41 dup ack...	Displays the number of duplicate acknowledgement packets and acknowledgement packets with data received.
10184 ack...	Displays the number of acknowledgement packets and bytes received.
Sent:	Displays the total number of TCP packets sent and the number of urgent packets sent.
25 control packets...	Displays the number of control packets sent and the number retransmitted.
11603 data packets...	Displays the number of data packets sent.
24 data packets retransmitted	Displays the number of data packets resent.

Table 12-9. show tcp statistics cp Command Example Fields (continued)

Field	Description
355 ack...	Displays the number of acknowledgement packets sent and the number of packet delayed.
0 window probe...	Displays the number of window probe and update packets sent.
7 Connections initiated...	Displays the number of TCP connections initiated, accepted, and established.
14 Connections closed...	Displays the number of TCP connections closed, dropped.
20 Total rxmt...	Displays the number of times the switch tried to re-send data and the number of connections dropped during the TCP retransmit timeout period.
0 Keepalive....	Lists the number of keepalive packets in timeout, the number keepalive probes and the number of TCP connections dropped during keepalive.

13

iSCSI Optimization

Overview

Internet small computer system interface (iSCSI) optimization enables quality-of-service (QoS) treatment for iSCSI storage traffic on an Aggregator.

Note: When iSCSI storage devices are detected on the server-ports, storm-control is disabled on those ports. When the iSCSI devices are off the ports, storm-control is enabled again.

iSCSI Commands

The following FTOS commands are used to verify the iSCSI Optimization feature:

- show iscsi
- show iscsi sessions
- show iscsi sessions detailed

show iscsi

Displays the currently configured iSCSI settings.

Syntax show iscsi

Command Mode EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 13-1. show iscsi Command Example

```
FTOS#show iscsi
iSCSI is enabled
iSCSI COS : dot1p is 4 no-remark
Session aging time: 10
Maximum number of connections is 256
-----------------------------------------------
iSCSI Targets and TCP Ports:
-----------------------------------------------
TCP Port    Target IP Address
3260
860
FTOS#
```

Related Commands

show iscsi sessions	Displays information on active iSCSI sessions on the switch.
show iscsi sessions detailed	Displays detailed information on active iSCSI sessions on the switch.

show iscsi sessions

Displays information on active iSCSI sessions on the switch.

Syntax show iscsi sessions

Command Mode EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 13-2. show iscsi sessions Command Example

```
FTOS# show isci sessions
Session 0:

Target: iqn.2001-05.com.equallogic:0-8a0906-0e70c2002-10a0018426a48c94-iom010
Initiator: iqn.1991-05.com.microsoft:win-x9l8v27yajg
ISID: 400001370000

Session 1:

Target: iqn.2001-05.com.equallogic:0-8a0906-0f60c2002-0360018428d48c94-iom011
Initiator: iqn.1991-05.com.microsoft:win-x9l8v27yajg
ISID: 400001370000.
```

Related Commands

show iscsi	Displays the currently configured iSCSI settings.
show iscsi sessions detailed	Displays detailed information on active iSCSI sessions on the switch.

show iscsi sessions detailed

Displays detailed information on active iSCSI sessions on the switch.

Syntax show iscsi sessions detailed [session *isid*]

Parameters

isid	Enter the session's iSCSi ID to display detailed information on specified iSCSi session.

Command Mode EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 13-3. show iscsi sessions detailed Command Example

```
 FTOS# show isci sessions detailed
Session 0       :
--------------------------------------------------------------------------------
Target:iqn.2010-11.com.ixia:ixload:iscsi-TG1
Initiator:iqn.2010-11.com.ixia.ixload:initiator-iscsi-2c
Up Time:00:00:01:28(DD:HH:MM:SS)
Time for aging out:00:00:09:34(DD:HH:MM:SS)
ISID:806978696102
Initiator        Initiator      Target         Target     Connection
IP Address       TCP Port       IP Address     TCPPort    ID
10.10.0.44          33345      10.10.0.101     3260       0
Session 1       :
--------------------------------------------------------------------------------
Target:iqn.2010-11.com.ixia:ixload:iscsi-TG1
Initiator:iqn.2010-11.com.ixia.ixload:initiator-iscsi-35
Up Time:00:00:01:22(DD:HH:MM:SS)
Time for aging out:00:00:09:31(DD:HH:MM:SS)
ISID:806978696102
Initiator        Initiator       Target        Target     Connection
IP Address       TCP Port        IP Address    TCPPort    ID
10.10.0.53           33432      10.10.0.101    3260       0
```

Related Commands

show iscsi	Displays the currently configured iSCSI settings.
show iscsi sessions	Displays information on active iSCSI sessions on the switch.

14

Link Aggregation Control Protocol (LACP)

Overview

This chapter contains commands for Dell Force10's implementation of the link aggregation control protocol (LACP) for the creation of dynamic link aggregation groups (LAGs — called *port-channels* in FTOS parlance).

LACP Commands

Use the following commands for LACP:

- clear lacp counters
- debug lacp
- show lacp

clear lacp counters

Clear Port Channel counters.

Syntax clear lacp *port-channel-number* counters

Parameters

port-channel-number	Enter a port-channel number: Range: 1 to 128

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Related Commands

show lacp	Displays the LACP configuration

debug lacp

Debug LACP (events).

Syntax

debug lacp [events | pdu interface [in | out]]

To disable LACP debugging, use the no debug lacp [events | pdu interface [in | out]] command.

Parameters

events	(OPTIONAL) Enter the keyword events to debug LACP event information.
pdu in | out	(OPTIONAL) Enter the keyword pdu to debug LACP Protocol Data Unit information. Optionally, enter an in or out parameter to: • Receive enter in • Transmit enter out
interface in | out	Enter the following keywords and slot/port or number information: • For a Ten Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information.

Defaults

none

Command Modes

EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

show lacp

Displays the LACP matrix.

Syntax

show lacp *port-channel-number* [sys-id | counters]

Parameters

port-channel-number	Enter a port-channel number: Range: 1 to 128
sys-id	(OPTIONAL) Enter the keyword sys-id and the value that identifies a system.
counters	(OPTIONAL) Enter the keyword counters to display the LACP counters.

Command Modes

EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example 1

Figure 14-1. show lacp port-channel-number Command Example

```
FTOS#show lacp 128
Port-channel 1 admin up, oper up, mode lacp
Actor   System ID:  Priority 32768, Address 0001.e800.a12b
Partner System ID:  Priority 32768, Address 0001.e801.45a5
                    Actor Admin Key 1, Oper Key 1, Partner Oper Key 1
                    LACP LAG 1 is an aggregatable link

A - Active LACP, B - Passive LACP, C - Short Timeout, D - Long Timeout
E - Aggregatable Link, F - Individual Link, G - IN_SYNC, H - OUT_OF_SYNC
I - Collection enabled, J - Collection disabled, K - Distribution enabled L -
Distribution disabled,
M - Partner Defaulted, N - Partner Non-defaulted, O - Receiver is in expired state,
P - Receiver is not in expired state

Port Te 0/1 is enabled, LACP is enabled and mode is lacp
  Actor   Admin: State ACEHJLMP Key 1      Priority 128
           Oper: State ACEGIKNP Key 1      Priority 128
  Partner Admin: State BDFHJLMP Key 0      Priority 0
           Oper: State BCEGIKNP Key 1      Priority 128
FTOS#
```

Example 2

Figure 14-2. show lacp sys-id Command Example

```
FTOS#show lacp 1 sys-id
Actor   System ID:  Priority 32768, Address 0001.e800.a12b
Partner System ID:  Priority 32768, Address 0001.e801.45a5

FTOS#
```

Example 3

Figure 14-3. show lacp counter Command Example

```
FTOS#show lacp 1 counters
---------------------------------------------------------------------------
             LACP PDU            Marker PDU         Unknown  Illegal
Port     Xmit       Recv       Xmit       Recv       Pkts Rx  Pkts Rx
---------------------------------------------------------------------------
TenGig   0/1 200        200        0          0          0        0
FTOS#
```

Related Commands

clear lacp counters	Clears the LACP counters.
show interfaces port-channel	Displays the information on configured Port Channel groups.

15

Layer 2

Overview

This chapter describes commands to configure Layer 2 features. It contains the following sections:

- MAC Addressing Commands
- Virtual LAN (VLAN) Commands

MAC Addressing Commands

The following commands are related to configuring, managing, and viewing MAC addresses:

- clear mac-address-table dynamic
- show cam mac stack-unit

Virtual LAN (VLAN) Commands

The following commands configure and monitor virtual local area networks (VLANs). VLANs are a virtual interface and use many of the same commands as physical interfaces.

You can configure an IP address and Layer 3 protocols on a VLAN called Inter-VLAN routing. FTP, TFTP, ACLs, and SNMP are not supported on a VLAN.

Occasionally, while sending broadcast traffic over multiple Layer 3 VLANs, the virtual router redundancy protocol (VRRP) state of a VLAN interface may continually switch between Master and Backup.

For more information, also refer to Virtual LAN (VLAN) Commands.

clear mac-address-table dynamic

Clear the MAC address table of all MAC address learned dynamically.

Syntax clear mac-address-table dynamic {address *mac-address* | all | interface *interface* | vlan *vlan-id*}

Parameters

address *mac-address*	Enter the keyword address followed by a MAC address in nn:nn:nn:nn:nn:nn format.
all	Enter the keyword all to delete all MAC address entries in the MAC address table.
interface *interface*	Enter the following keywords and slot/port or number information: • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information.
vlan *vlan-id*	Enter the keyword vlan followed by a VLAN ID number from 1 to 4094.

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

description

Add a description about the selected VLAN.

Syntax description *description*

To remove the description from the VLAN, use the no description command.

Parameters

description	Enter a text string description to identify the VLAN (80 characters maximum).

Defaults none

Command Modes INTERFACE VLAN

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Related Commands

show vlan	Displays VLAN configuration.

show cam mac stack-unit

Displays the Content Addressable Memory (CAM) size and the portions allocated for MAC addresses and for MAC ACLs.

Syntax show cam mac stack-unit *unit_number* port-set *port-pipe* count [vlan *vlan-id*] [interface *interface*]

Parameters

stack-unit *unit_number*	(REQUIRED) Enter the keyword stack-unit followed by a stack member number to select the stack unit for which to gather information. Range: 0 to 5
port-set *port-pipe*	(REQUIRED) Enter the keyword port-set followed by a Port-Pipe number to select the Port-Pipe for which to gather information. Range: 0
address *mac-addr*	(OPTIONAL) Enter the keyword address followed by a MAC address in the nn:nn:nn:nn:nn:nn format to display information on that MAC address.
dynamic	(OPTIONAL) Enter the keyword dynamic to display only those MAC addresses learned dynamically by the switch.
static	(OPTIONAL) Enter the keyword static to display only those MAC address specifically configured on the switch.
interface *interface*	(OPTIONAL) Enter the keyword interface followed by the interface type, slot and port information: • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information.
vlan *vlan-id*	(OPTIONAL) Enter the keyword vlan followed by the VLAN ID to display the MAC address assigned to the VLAN. Range: 1 to 4094.

Command Modes

EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

16

Link Layer Discovery Protocol (LLDP)

Overview

The link layer discovery protocol (LLDP) advertises connectivity and management from the local station to the adjacent stations on an IEEE 802 LAN. LLDP facilitates multi-vendor interoperability by using standard management tools to discover and make available a physical topology for network management. The Dell Fore10 operating software (FTOS) implementation of LLDP is based on IEEE standard 802.1ab.

LLDP Commands

This chapter contains the following commands, in addition to the commands:

- clear lldp counters
- debug lldp interface
- protocol lldp (Configuration)
- protocol lldp (Interface)
- show lldp neighbors
- show lldp statistics

The starting point for using LLDP is invoking LLDP with the protocol lldp command in either CONFIGURATION or INTERFACE mode.

The information distributed by LLDP is stored by its recipients in a standard management information base (MIB). The information can be accessed by a network management system through a management protocol such as SNMP.

For details about implementing LLDP/LLDP-MED, refer to the Link Layer Discovery Protocol chapter of the *Dell PowerEdge Configuration Guide for the M I/O Aggregator*.

clear lldp counters

Clear LLDP transmitting and receiving counters for all physical interfaces or a specific physical interface.

Syntax clear lldp counters *interface*

Parameters

interface	Enter the following keywords and slot/port or number information: • For a 10-Gigabit Ethernet interface, enter the keyword tenGigabitEthernet followed by the slot/port information.

Defaults none

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

debug lldp interface

Enable LLDP debugging to display timer events, neighbor additions or deletions, and other information about incoming and outgoing packets.

Syntax debug lldp interface {*interface* | all}{events | packet {brief | detail} {tx | rx | both}}

To disable debugging, use the no debug lldp interface {*interface* | all}{events} {packet {brief | detail} {tx | rx | both}} command.

Parameters

interface	Enter the following keywords and slot/port or number information: • For a 10-Gigabit Ethernet interface, enter the keyword tenGigabitEthernet followed by the slot/port information.
all	(OPTIONAL) Enter the keyword all to display information on all interfaces.
events	(OPTIONAL) Enter the keyword events to display major events such as timer events.
packet	(OPTIONAL) Enter the keyword packet to display information regarding packets coming in or going out.
brief	(OPTIONAL) Enter the keyword brief to display brief packet information.
detail	(OPTIONAL) Enter the keyword detail to display detailed packet information.
tx	(OPTIONAL) Enter the keyword tx to display transmit only packet information.
rx	(OPTIONAL) Enter the keyword rx to display receive only packet information
both	(OPTIONAL) Enter the keyword both to display both receive and transmit packet information.

Defaults none

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

protocol lldp (Configuration)

Enable LLDP globally on the switch.

Syntax protocol lldp

To disable LLDP globally on the chassis, use the no protocol lldp command.

Defaults Disabled

Command Modes CONFIGURATION (conf-lldp)

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

protocol lldp (Interface)

Enter the LLDP protocol in the INTERFACE mode.

Syntax [no] protocol lldp

To return to the global LLDP configuration mode, use the no protocol lldp command from the Interface mode.

Defaults LLDP is not enabled on the interface.

Command Modes INTERFACE (conf-if-*interface*-lldp)

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information You must enable LLDP globally from CONFIGURATION mode before you can configure it on an interface. This command places you in LLDP mode on the interface; it does not enable the protocol.

When you enter the LLDP protocol in the Interface context, it overrides global configurations. When you execute the no protocol lldp from INTERFACE mode, interfaces begin to inherit the configuration from global LLDP CONFIGURATION mode.

show lldp neighbors

Displays LLDP neighbor information for all interfaces or a specified interface.

Syntax show lldp neighbors [*interface*] [detail]

Parameters

interface	(OPTIONAL) Enter the following keywords and slot/port or number information: • For a 10-Gigabit Ethernet interface, enter the keyword tenGigabitEthernet followed by the slot/port information.
detail	(OPTIONAL) Enter the keyword detail to display all the TLV information, timers, and LLDP tx and rx counters.

Defaults none

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 16-1. show lldp neighbors Command Example

```
FTOS(conf-if-te-1/31)#do show lldp neighbors
 Loc PortID   Rem Host Name     Rem Port Id               Rem Chassis Id
 ---------------------------------------------------------------------------

 Te 1/37      FTOS              TenGigabitEthernet 0/37   00:01:e8:05:40:46
 Te 1/38      FTOS              TenGigabitEthernet 0/38   00:01:e8:05:40:46
 Te 1/39      FTOS              TenGigabitEthernet 0/39   00:01:e8:05:40:46
 Te 1/40      FTOS              TenGigabitEthernet 0/40   00:01:e8:05:40:46
FTOS(conf-if-te-1/31)#
```

Usage Information Omitting the keyword detail displays only the remote chassis ID, Port ID, and Dead Interval.

show lldp statistics

Displays the LLDP statistical information.

Syntax show lldp statistics

Defaults none

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 16-2. show lldp statistics Command Example

```
FTOS#show lldp statistics
--------- LLDP GLOBAL STATISTICS ON CHASSIS ------------
Total number of neighbors: 4
Last table change time: 00:01:17, In ticks: 3859
Total number of Table Inserts: 7
Total number of Table Deletes: 3
Total number of Table Drops: 0
Total number of Table Age Outs: 0
FTOS#
```

17

Port Monitoring

Overview

The port monitoring feature allows you to monitor network traffic by forwarding a copy of each incoming or outgoing packet from one port to another port.

Monitoring Commands

- description
- monitor session
- show config
- show monitor session
- show running-config monitor session
- source (port monitoring)

Important Points to Remember

- Port monitoring is supported on physical ports only; virtual local area networks (VLANs) and port-channel interfaces do not support port monitoring.
- The monitoring (destination, “MG”) and monitored (source, “MD”) ports must be on the same switch.
- The monitored (source) interface must be a server-facing interface in the format slot/port, where valid slot numbers are 0-1 and server-facing port numbers are from 1 to 32. The monitoring interface must be an uplink port in the chassis.
- FTOS permits a limited set of commands for monitoring ports. To display these commands, use the ? command.
- A monitoring port may not be a member of a VLAN.
- There may only be one destination port in a monitoring session.
- A source port (MD) can only be monitored by one destination port (MG). If you try to assign a monitored port to more than one monitoring port, the following error is displayed (Message 1).

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Message 1 Assign a Monitored Port to More than One Monitoring Port

```
FTOS(conf)#mon ses 1
FTOS(conf-mon-sess-1)#source tengig 0/0 destination tengig 0/60 direction both
FTOS(conf-mon-sess-1)#do show mon ses
     SessionID       Source       Destination     Direction      Mode        Type
     ---------       ------       -----------     ---------      ----        ----
               1       TenGig 0/0       TenGig 0/60         both           interface
Port-based
FTOS(conf-mon-sess-1)#mon ses 2
FTOS(conf-mon-sess-2)#source tengig 0/0 destination tengig 0/61 direction both
% Error: MD port is already being monitored.
```

Note: There is no limit to the number of monitoring sessions per system, provided that there are only four destination ports per port-pipe. If each monitoring session has a unique destination port, the maximum number of session is four per port-pipe.

description

Enter a description of this monitoring session.

Syntax description {*description*}

To remove the description, use the no description {*description*} command.

Parameters

description	Enter a description regarding this session(80 characters maximum).

Defaults none

Command Modes MONITOR SESSION (conf-mon-sess-*session-ID*)

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Related Commands

monitor session	Enables a monitoring session.

monitor session

Create a session for monitoring traffic with port monitoring.

Syntax monitor session *session-ID*

To delete a session, use the no monitor session *session-ID* command.

To delete all monitor sessions, use the no monitor session all command.

Parameters

session-ID	Enter a session identification number. Range: 0 to 65535

Defaults none

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 17-1. monitor session Command Example

```
FTOS(conf)# monitor session 60
FTOS(conf-mon-sess-60)
```

Usage Information The monitor command is saved in the running configuration at the Monitor Session mode level and can be restored after a chassis reload.

Related Commands

description	Displays the monitor session
show running-config monitor session	Displays the running configuration of a monitor session

show config

Displays the current monitor session configuration.

Syntax show config

Defaults none

Command Modes MONITOR SESSION (conf-mon-sess-*session-ID*)

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 17-2. show config Command Example

```
FTOS(conf-mon-sess-5)#show config
!
monitor session 5
source TenGigabitEthernet 0/4 destination TenGigabitEthernet 0/43 direction rx
FTOS(conf-mon-sess-5)#
```

show monitor session

Displays the monitor information of a particular session or all sessions.

Syntax show monitor session {*session-ID*}

To display monitoring information for all sessions, use the show monitor session command.

Parameters

session-ID	(OPTIONAL) Enter a session identification number. Range: 0 to 65535

Defaults none

Command Modes

EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 17-3. show monitor session Command Example

```
FTOS#show monitor session 5
     SessionID       Source       Destination     Direction      Mode        Type
     ---------       ------       -----------     ---------      ----        ----
             5       Te 0/4       Te 0/43         rx             interface   Port-based
FTOS#
```

Related Commands

monitor session	Creates a session for monitoring.

show running-config monitor session

Displays the running configuration of all monitor sessions or a specific session.

Syntax

show running-config monitor session {*session-ID*}

To display the running configuration for all monitor sessions, use just the show running-config monitor session command.

Parameters

session-ID	(OPTIONAL) Enter a session identification number. Range: 0 to 65535

Defaults

none

Command Modes

EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 17-4. show running-config monitor session Command Example

```
FTOS#show run monitor session
!
monitor session 5
source TenGigabitEthernet 0/4 destination TenGigabitEthernet 0/43 direction rx
!
monitor session 20
source TenGigabitEthernet 0/3 destination TenGigabitEthernet 0/42 direction both
FTOS#
FTOS#show run monitor session 20
!
monitor session 20
source TenGigabitEthernet 0/3 destination TenGigabitEthernet 0/42 direction both
FTOS#
```

Usage Information

The monitoring command is saved in the running configuration at the Monitor Session mode level and can be restored after a chassis reload.

Related Commands

monitor session	Creates a session for monitoring.
description	Displays a monitor session.

source (port monitoring)

Configure a port monitor source.

Syntax

source *interface* destination *interface* direction {rx | tx | both}

To disable a monitor source, use the no source *interface* destination *interface* direction {rx | tx | both} command.

Parameters

interface	Enter the one of the following keywords and slot/port information: • For a 10-Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information.
destination	Enter the keyword destination to indicate the interface destination.
direction {rx | tx | both}	Enter the keyword direction followed by one of the packet directional indicators. rx: to monitor receiving packets only tx: to monitor transmitting packets only both: to monitor both transmitting and receiving packets

Defaults

none

Command Modes

MONITOR SESSION (conf-mon-sess-*session-ID*)

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 17-5. Configuring a Port Monitor Source Command Example

```
FTOS(conf-mon-sess-11)#source tengig 10/0 destination tengig 10/47 direction
rx
FTOS(conf-mon-sess-11)#
```

Usage Information

The monitored (source) interface must be a server-facing interface in the format slot/port, where valid slot numbers are 0-1 and server-facing port numbers are from 1 to 32.

18

Quality of Service (QoS)

Overview

The Dell Force10 operating software (FTOS) commands for quality of service (QoS) include traffic conditioning and congestion control. This chapter contains the section:

- Policy-Based QoS Commands

Policy-Based QoS Commands

The commands are:

- show qos statistics
- show qos dot1p-queue-mapping

show qos statistics

View QoS statistics.

Syntax show qos statistics [*interface*]

Parameters

interface	For a Ten Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information.

Defaults none

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example 1

Figure 18-1. show qos statistics Command Example

```
FTOS#show qos statistics
Interface Te 0/20
Queue#  Matched Pkts
  0      0
  1      0
  2      0
  3      0
FTOS#
```

Table 18-1. show qos statistics Command Description (ED and EE Series)

Field	Description
Queue #	Queue Number
Matched Pkts	The number of packets that matched the class-map criteria. **Note:** When trust is configured, matched packet counters are not incremented in this field.

show qos dot1p-queue-mapping

View dot1p to queue mapping.

Syntax show qos dot1p-queue-mapping

Defaults none

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 18-2. show qos wred-profile Command Example

```
FTOS#show qos dot1p-queue-mapping
 Dot1p Priority : 0  1  2  3  4  5  6  7
          Queue : 0  0  0  1  2  3  3  3
FTOS#
```

19

Security

Commands

This chapter describes various types of security commands in the Dell Force10 operating software (FTOS), in the following sections:

- Authentication and Password Commands
- SSH Server and SCP Commands

Note: Starting with FTOS version 7.2.1.0, LEAP with MSCHAP v2 supplicant is implemented.

Authentication and Password Commands

This section contains the following commands controlling management access to the system:

- enable password
- enable restricted
- enable smux-debug
- service password-encryption
- show users
- username

SSH Server and SCP Commands

FTOS supports secure shell (SSH) protocol versions 1.5 and 2.0. SSH is a protocol for secure remote login over an insecure network. SSH sessions are encrypted and use authentication. The SSH and SCP commands are:

- show ip ssh
- show ip ssh client-pub-keys
- show ip ssh rsa-authentication
- ssh

enable password

Change the password for the enable command.

Syntax

enable password [level *level*] [*encryption-type*] *password*

To delete a password, use the no enable password [*encryption-type*] *password* [level *level*] command.

Parameters

level *level*	(OPTIONAL) Enter the keyword level followed by a number as the level of access. Range: 1 to 15
encryption-type	(OPTIONAL) Enter the number 7 or 0 as the encryption type. Enter a 7 followed by a text string as the hidden password. The text string must be a password that was already encrypted by a Dell Force10 router. Use this parameter only with a password that you copied from the show running-config file of another Dell Force10 router.
password	Enter a text string, up to 32 characters long, as the clear text password.

Defaults

No password is configured. *level* = 15

Command Modes

CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

Use this command to define a password for a level.

Passwords must meet the following criteria:

- Start with a letter, not a number.
- Passwords can have a regular expression as the password. To create a password with a regular expression in it, you must use CNTL + v prior to entering regular expression. For example, to create the password `abcd]e`, you type "`abcd` CNTL v `]e`". When the password is created, you do not use the CNTL + v key combination and enter "`abcd]e`".

Note: The question mark (?) and the tilde (~) are not supported characters.

Related Commands

show running-config	Views the current configuration.

enable restricted

Allows Dell Force10 technical support to access restricted commands.

Syntax

enable restricted [*encryption-type*] *password*

To disallow access to restricted commands, use the no enable restricted command.

Parameters

encryption-type	(OPTIONAL) Enter the number 7 as the encryption type. Enter 7 followed a text string as the hidden password. The text string must be a password that was already encrypted by a Dell Force10 router. Use this parameter only with a password that you copied from the show running-config file of another Dell Force10 router.
password	Enter a text string, up to 32 characters long, as the clear text password.

Command Modes Not configured.

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information Only Dell Force10 Technical Support staff use this command.

enable smux-debug

Enable SMUX debug-level commands.

Syntax enable smux-debug

To disable SMUX debug, use no enable smux-debug command.

Command Modes Not configured.

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

service password-encryption

Encrypt all passwords configured in FTOS.

Syntax service password-encryption

To store new passwords as clear text, use the no service password-encryption command.

Defaults Enabled.

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

△ **Caution:** Encrypting passwords with this command does not provide a high level of security. When the passwords are encrypted, you cannot return them to plain text unless you re-configure them. To remove an encrypted password, use the no password *password* command.

Usage Information

To keep unauthorized people from viewing passwords in the switch configuration file, use the service password-encryption command. This command encrypts the clear-text passwords created for user name passwords, authentication key passwords, the privileged command password, and console and virtual terminal line access passwords.

To view passwords, use the show running-config command.

show ip ssh

Displays information about established SSH sessions.

Syntax show ip ssh

Command Modes EXEC

EXEC Privilege

Example

Figure 19-1. show ip ssh Command Example

```
FTOS#show ip ssh
2#show ip ssh
SSH server                : disabled.
SSH server version        : v1 and v2.
Password Authentication   : enabled.
Hostbased Authentication  : disabled.
RSA       Authentication  : disabled.
FTOS#
```

Related Commands

show ip ssh client-pub-keys	Displays the client-public keys.

show ip ssh client-pub-keys

Displays the client public keys used in host-based authentication.

Syntax show ip ssh client-pub-keys

Defaults none

Command Modes EXEC

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 19-2. show ip ssh client-pub-keys Command Example

```
FTOS#show ip ssh client-pub-keys

poclab4,123.12.1.123 ssh-rsa AAAAB3NzaC1yc2EAAAABIwAAAIEAox/
QQp8xYhzOxn07yh4VGPAoUfgKoieTHO9G4sNV+ui+DWEc3cgYAcU5Lai1MU2ODrzhCwyDNp05tKBU3tReG1
o8AxLi6+S4hyEMqHzkzBFNVqHzpQc+Rs4p2urzV0F4pRKnaXdHf3Lk4D460HZRhhVrxqeNxPDpEnWIMPJi0
ds= ashwani@poclab4

FTOS#
```

Usage Information This command displays the contents of the file flash://ADMIN_DIRssh/knownhosts

show ip ssh rsa-authentication

Displays the authorized-keys for the RSA authentication.

Syntax show ip ssh rsa-authentication {my-authorized-keys}

Parameters

my-authorized-keys	Display the RSA authorized keys.

Defaults none

Command Modes EXEC

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 19-3. show ip ssh rsa-authentication Command Example

```
FTOS#show ip ssh rsa-authentication my-authorized-keys
ssh-rsa
AAAAB3NzaC1yc2EAAAABIwAAAIEAyB17l4gFp4r2DRHIvMc1VZd0Sg5GQxRV1y1X1JOMeO6Nd0WuYyzrQMM
4qJAoBwtneOXfLBcHF3V2hcMIqaZN+CRCnw/
zCMlnCf0+qVTd1oofsea5r09kS0xTp0CNfHXZ3NuGCq9Ov33m9+U9tMwhS8vy8AVxdH4x4km3c3t5Jvc=
freedom@poclab4

FTOS#
```

Usage Information This command displays the contents of the file flash:/ADMIN_DIR/ssh/authorized-keys.*username.*

show users

View information on all users logged into the switch.

Syntax show users [all]

Parameters

all	(OPTIONAL) Enter the keyword all to view all terminal lines in the switch.

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 19-4. show users Command Example

```
FTOS#show user
    Line           User                    Host(s)    Location
    0 console 0    admin                   idle
*   3 vty 1        admin                   idle       172.31.1.4
FTOS#
```

Table 1 describes the information in the show users command example.

Table 1 show users Command Description

Field	Description
(untitled)	Indicates with am asterisk (*) which terminal line you are using.
Line	Displays the terminal lines currently in use.
User	Displays the user name of all users logged in.
Host(s)	Displays the terminal line status.
Location	Displays the IP address of the user.

Related Commands

ssh	Enables a user.

ssh

Open an SSH connection specifying the hostname, username, port number and version of the SSH client.

FTOS supports both inbound and outbound SSH sessions using IPv4 addressing. Inbound SSH supports accessing the system through the management interface as well as through a physical Layer 3 interface.

Syntax ssh {*hostname* | *ipv4 address*} [-l *username* | -p *port-number* | -v {1 | 2}]

Parameters

hostname	(OPTIONAL) Enter the IP address or the hostname of the remote device.
ipv4 address	(OPTIONAL) Enter the IP address in dotted decimal format A.B.C.D.
-l *username*	(OPTIONAL) Enter the keyword -l followed by the user name used in this SSH session. Default: The user name of the user associated with the terminal.
-p *port-number*	(OPTIONAL) Enter the keyword -p followed by the port number. Range: 1 to 65536 Default: 22
-v {1 | 2}	(OPTIONAL) Enter the keyword -v followed by the SSH version 1 or 2. Default: The version from the protocol negotiation

Defaults As above.

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 19-5. ssh Command Example

```
FTOS#ssh 123.12.1.123 -l ashwani -p 5005 -v 2
```

username

Establish an authentication system based on user names.

Syntax

username *name* [access-class *access-list-name*] [nopassword | {password | secret} [*encryption-type*] *password*] [privilege *level*]

If you do not want a specific user to enter a password, use the nopassword option.

To delete authentication for a user, use the no username *name* command.

Parameters

name	Enter a text string for the name of the user up to 63 characters.
access-class *access-list-name*	Enter the keyword access-class followed by the name of a configured access control list (either an IP access control list or MAC access control list).
nopassword	Enter the keyword nopassword to specify that the user should not enter a password.
password	Enter the keyword password followed by the *encryption-type* or the password.
secret	Enter the keyword secret followed by the *encryption-type* or the password.
encryption-type	Enter an encryption type for the *password* that you will enter. • 0 directs FTOS to store the password as clear text. It is the default encryption type when using the password option. • 7 to indicate that a password encrypted using a DES hashing algorithm will follow. This encryption type is available with the password option only. • 5 to indicate that a password encrypted using an MD5 hashing algorithm will follow. This encryption type is available with the secret option only, and is the default encryption type for this option.
password	Enter a string up to 32 characters long.
privilege *level*	Enter the keyword privilege followed by a number from zero (0) to 15.
secret	Enter the keyword secret followed by the encryption type.

Defaults

The default encryption type for the password option is 0. The default encryption type for the secret option is 0.

Command Modes

CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

To view the defined user names, use the show running-config user command.

Related Commands

service password-encryption	Specifies a password for users on terminal lines.
show running-config	Views the current configuration.

Simple Network Management Protocol (SNMP) and Syslog

Overview

This chapter contains commands to configure and monitor the simple network management protocol (SNMP) v1/v2 and Syslog. The chapter contains the following sections:

- SNMP Commands
- Syslog Commands

SNMP Commands

The SNMP command available in the Dell Force10 operating software (FTOS) is:

- snmp-server community

The SNMP is used to communicate management information between the network management stations and the agents in the network elements. FTOS supports SNMP versions 1, and 2c supporting only read-only mode.

Important Points to Remember

- Typically, 5-second timeout and 3-second retry values on an SNMP server are sufficient for both local area network (LAN) and wide area network (WAN) applications. If you experience a timeout with these values, the recommended best practice on Dell Force10 switches (to accommodate their high port density) is to increase the timeout and retry values on your SNMP server to the following:
  - SNMP Timeout—greater than 3 seconds
  - SNMP Retry count—greater than 2 seconds
- SNMP operations are not supported on a virtual LAN (VLAN).

Syslog Commands

The following commands allow you to configure logging functions on all Dell Force10 switches:

- clear logging
- logging hostname
- logging buffered
- logging console
- logging facility
- logging history
- logging history size
- logging monitor
- logging on
- logging source-interface
- logging trap

- show logging
- snmp-server community
- terminal monitor

clear logging

Clear the messages in the logging buffer.

Syntax clear logging

Defaults none

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Related Commands

show logging	Displays logging settings and system messages in the internal buffer.

logging hostname

Configure an IP address or host name of a Syslog server where logging messages will be sent. Multiple logging servers of IPv4 can be configured.

Syntax logging {*ipv4-address* | *hostname*}

To disable logging, enter no logging.

Parameters

ipv4-address	Enter an IPv4 address (A.B.C.D).
hostname	Enter the name of a host already configured and recognized by the switch.

Defaults Disabled

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Related Commands

logging on	Enables the logging asynchronously to logging buffer, console, Syslog server, and terminal lines.
logging trap	Enables logging to the Syslog server based on severity.

logging buffered

Enable logging and specify which messages are logged to an internal buffer. By default, all messages are logged to the internal buffer.

Syntax

logging buffered [*level*] [*size*]

To return to the default values, use the no logging buffered command. To disable logging stored to an internal buffer, use the no logging buffered command.

Parameters

level	(OPTIONAL) Indicate a value from 0 to 7 or enter one of the following equivalent words: emergencies, alerts, critical, errors, warnings, notifications, informational, or debugging. Default: 7 or debugging.
size	(OPTIONAL) Indicate the size, in bytes, of the logging buffer. The number of messages buffered depends on the size of each message. Range: 40960 to 524288. Default: 40960 bytes.

Defaults

level = 7; *size* = 40960 bytes

Command Modes

CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

When you decrease the buffer size, all messages stored in the buffer are lost. Increasing the buffer size does not affect messages stored in the buffer.

Related Commands

clear logging	Clears the logging buffer.
logging hostname	Returns the logging buffered parameters to the default setting.
show logging	Displays the logging setting and system messages in the internal buffer.

logging console

Specify which messages are logged to the console.

Syntax

logging console [*level*]

To return to the default values, use the logging hostname command. To disable logging to the console, use the no logging console command.

Parameters

level	(OPTIONAL) Indicate a value from 0 to 7 or enter one of the following parameters: emergencies, alerts, critical, errors, warnings, notifications, informational, or debugging. Default: 7 or debugging.

Defaults

7 or debugging

Command Modes

CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Related Commands

clear logging	Clears the logging buffer.
logging hostname	Returns the logging console parameters to the default setting.
show logging	Displays the logging settings and system messages in the internal buffer.

logging facility

Configure the Syslog facility, used for error messages sent to Syslog servers.

Syntax

logging facility [*facility-type*]

To return to the default values, use the no logging facility command.

Parameters

facility-type	(OPTIONAL) Enter one of the following parameters. • auth (authorization system) • cron (Cron/at facility) • deamon (system deamons) • kern (kernel) • local0 (local use) • local1 (local use) • local2 (local use) • local3 (local use) • local4 (local use) • local5 (local use) • local6 (local use) • local7 (local use) • lpr (line printer system) • mail (mail system) • news (USENET news) • sys9 (system use) • sys10 (system use) • sys11 (system use) • sys12 (system use) • sys13 (system use) • sys14 (system use) • syslog (Syslog process) • user (user process) • uucp (Unix to Unix copy process) The default is local7.

Defaults

local7

Command Modes

CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Related Commands

logging hostname	Enables logging to a Syslog server.
logging on	Enables logging.

logging history

Specify which messages are logged to the history table of the switch and the SNMP network management station (if configured).

Syntax logging history *level*

To return to the default values, use the no logging history command.

Parameters

level	Indicate a value from 0 to 7 or enter one of the following equivalent words: emergencies, alerts, critical, errors, warnings, notifications, informational, or debugging. The default is 4.

Defaults 4 or warnings

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Related Commands

show logging history	Displays information logged to the history buffer.

logging history size

Specify the number of messages stored in the FTOS logging history table.

Syntax logging history size *size*

To return to the default values, use the no logging history size command.

Parameters

size	Indicate a value as the number of messages to be stored. Range: 0 to 500. Default: 1 message.

Defaults 1 message

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information When the number of messages reaches the limit you set with the logging history size command, older messages are deleted as newer ones are added to the table.

Related Commands

show logging history	Displays information logged to the history buffer.

logging monitor

Specify which messages are logged to Telnet applications.

Syntax

logging monitor [*level*]

To disable logging to terminal connections, use the no logging monitor command.

Parameters

level	Indicate a value from 0 to 7 or enter one of the following parameters: emergencies, alerts, critical, errors, warnings, notifications, informational, or debugging. The default is 7 or debugging.

Defaults

7 or debugging

Command Modes

CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Related Commands

logging hostname	Returns the logging monitor parameters to the default setting.

logging on

Specify that debug or error messages are asynchronously logged to multiple destinations, such as logging buffer, Syslog server, or terminal lines.

Syntax

logging on

To disable logging to logging buffer, Syslog server and terminal lines, use the no logging on command.

Defaults

Enabled

Command Modes

CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

When you use the no logging on command, messages are logged only to the console.

Related Commands

logging hostname	Enables logging to Syslog server.
logging buffered	Sets the logging buffered parameters.
logging console	Sets the logging console parameters.
logging monitor	Sets the logging parameters for the terminal connections.

logging source-interface

Specify that the IP address of an interface is the source IP address of Syslog packets sent to the Syslog server.

Syntax

logging source-interface *interface*

To disable this command and return to the default setting, use the no logging source-interface command.

Parameters

interface	Enter the following keywords and slot/port or number information: • For a Ten Gigabit Ethernet interface, enter the keyword TenGigabitEthernet followed by the slot/port information. • For VLAN interface, enter the keyword vlan followed by a number from 1 to 4094.

Defaults

Not configured.

Command Modes

CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

Syslog messages contain the IP address of the interface used to egress the router. By configuring the logging source-interface command, the Syslog packets contain the IP address of the interface configured.

Related Commands

logging hostname	Enables the logging to another device.

logging trap

Specify which messages are logged to the Syslog server based the message severity.

Syntax

logging trap [*level*]

To return to the default values, use the no logging trap command. To disable logging, use the no logging trap command.

Parameters

level	Indicate a value from 0 to 7 or enter one of the following parameters: emergencies, alerts, critical, errors, warnings, notifications, informational, or debugging. The default is 6.

Defaults

6 or informational.

Command Modes

CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Related Commands

logging hostname	Enables the logging to another device.
logging on	Enables logging.

show logging

Displays the logging settings and system messages logged to the internal buffer of the switch.

Syntax

show logging [*number* | [history [reverse] [*number*] | reverse [*number*] | summary | driverlog [stack-unit *number*] | kernellog [stack-unit *number*]]

Parameters

number	(OPTIONAL) Enter the number of message to be displayed on the output. Range: 1 to 65535
history	(OPTIONAL) Enter the keyword history to view only information in the Syslog history table.
reverse	(OPTIONAL) Enter the keyword reverse to view the Syslog messages in FIFO (first in, first out) order.
summary	(OPTIONAL) Enter the keyword summary to view a table showing the number of messages per type and per slot.
driverlog	(OPTIONAL) Enter the keyword driverlog to view the driverlog information per stack-unit. Enter the keyword stack-unit followed by the stack member ID of the switch for which you want to display the driver log. Range: 0 to 1
kernellog	(OPTIONAL) Enter the keyword kernellog to view the kernellog information per stack-unit. Enter the keyword stack-unit followed by the stack member ID of the switch for which you want to display the driver log. Range: 0 to 1

Command Modes

EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example 1 **Figure 20-1. show logging Command Example**

```
FTOS#show logging
Syslog logging: enabled
    Console logging: level debugging
    Monitor logging: level debugging
    Buffer logging: level debugging, 168 Messages Logged, Size (40960
bytes)
    Trap logging: level informational
        Logging to 172.16.1.162
        Logging to 10.10.10.4
        Logging to 10.1.2.4
        Logging to 172.31.1.4
        Logging to 133.33.33.4
Aug 1 15:05:53: %STKUNIT1-M:CP %SYS-5-CONFIG_I: Configured from  console
Jul 31 20:25:40: %STKUNIT1-M:CP %SYS-5-CONFIG_I: Configured from
console
Jul 31 20:14:03: %STKUNIT1-M:CP %SYS-5-CONFIG_I: Configured from
console
Jul 31 20:03:58: %STKUNIT1-M:CP %SYS-5-CONFIG_I: Configured from
console
Jul 31 18:22:10: %STKUNIT1-M:CP %SYS-5-CONFIG_I: Configured from
console
Jul 31 15:50:30: %STKUNIT1-M:CP %SYS-5-CONFIG_I: Configured from
console
Jul 31 14:26:22: %STKUNIT1-M:CP %SYS-5-CONFIG_I: Configured from
console
Jul 31 14:26:17: %STKUNIT1-M:CP %SEC-3-AUTHENTICATION_ENABLE_SUCCESS:
Enable pas
sword authentication success  on console
Jul 31 14:26:17: %STKUNIT1-M:CP %SEC-4-ENABLE_PASSW_NOT_CONFIGURED:
Enable passw
ord is required for authentication but not configured
Jul 31 10:38:12: %STKUNIT1-M:CP %SYSADM-5-CPU_THRESHOLD_CLR: Overall cpu
usage o
f management-unit drops below threshold. Cpu1minUsage (65%)
--More--
```

Example 2 **Figure 20-2. show logging history Command Example**

```
FTOS#show logging history
Syslog History Table: 1 maximum table entries,
saving level warnings or higher
 SNMP notifications not Enabled
May 22 08:53:09: %STKUNIT0-M:CP %SEC-3-AUTHENTICATION_ENABLE_SUCCESS:
Enable password authentication success on vty0 ( 10.11.68.22 )
FTOS#
```

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Example 3

Figure 20-3. show logging driverlog Command Example

```
FTOS#show logging driverlog stack-unit 1
0:Task(tUsrRoot): [    45232]SS DRV DEBUG: Wrapper init complete
1:Task(tUsrRoot): [   206775]SS DRV DEBUG: Core init complete
2:Task(tUsrRoot): [   221545]SS DRV DEBUG: SMUX-DRV: BASE MODUEL in
Fanout ENABLED
3:Task(tUsrRoot): [    24038]SS DRV DEBUG: port:32 isfanout:1
4:Task(tUsrRoot): [       27]SS DRV DEBUG: port:36 isfanout:1
5:Task(tUsrRoot): [       19]SS DRV DEBUG: port:40 isfanout:0
6:Task(tUsrRoot): [       17]SS DRV DEBUG: port:44 isfanout:0
7:Task(tUsrRoot): [       22]SS DRV DEBUG: port:48 isfanout:1
8:Task(tUsrRoot): [       22]SS DRV DEBUG: port:52 isfanout:1
9:Task(tUsrRoot): [       33]SS DRV DEBUG: Appl init complete
10:Task(tUsrRoot): [     2590]SS DRV DEBUG: Util Init complete
11:Task(tUsrRoot): [       21]SS DRV DEBUG: Device Entry Get Complete
12:Task(tUsrRoot): [       25]SS DRV DEBUG: Sysconf init complete
13:Task(tUsrRoot): [       19]SS DRV DEBUG: Initializing default soc/sal
configs
14:Task(tUsrRoot): [      237]SS DRV DEBUG: sysconf probe complete
15:Task(tUsrRoot): [      118]SS DRV DEBUG: Updating based on Optm
16:Task(tUsrRoot): [    10351]SS DRV DEBUG: Updating based on Fanout
17:Task(tUsrRoot): [     2561]SS DRV DEBUG: unit 0 localWc6 speed10
18:Task(tUsrRoot): [       24]SS DRV DEBUG: unit 0 localWc5 speed10
19:Task(tUsrRoot): [       21]SS DRV DEBUG: unit 0 localWc3 speed40
20:Task(tUsrRoot): [       18]SS DRV DEBUG: unit 0 localWc2 speed40
```

snmp-server community

Configure a new community string access for SNMPv1, and v2.

Syntax

snmp-server community *community-name* {ro}

To remove access to a community, use the no snmp-server community *community-string* {ro | rw} command.

Parameters

community-name	Enter a text string (up to 20 characters long) to act as a password for SNMP.
ro	Enter the keyword ro to specify read-only permission.

Defaults

none

Command Modes

CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

Figure 20-4 configures a community named guest that is mapped to the security named guestuser with Read Only (ro) permissions.

Example

Figure 20-4. snmp-server community Command Example

```
FTOS#config
FTOS(conf)# snmp-server community guest ro
```

Related Commands

show running-config	Displays the current SNMP configuration and defaults.

terminal monitor

Configure the FTOS to display messages on the monitor/terminal.

Syntax terminal monitor

To return to default settings, use the terminal no monitor command.

Defaults Disabled.

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Related Commands

logging monitor	Sets the logging parameters on the monitor/terminal.

21

Stacking Commands

Overview

Stacking is supported on an Aggregator only on the 40GbE ports on the base module. Stacking is limited to two Aggregators in the same chassis in a single stack. Up to three stacks are supported in an M1000e chassis.

Stacking provides a single point of management and NIC teaming for high availability and higher throughput. To configure an Aggregator stack, you must use the CLI.

The stacking commands are always available and operational, whether or not an Aggregator has a stacking module inserted. You can use the commands to pre-configure an Aggregator, so that the configuration settings are invoked when the Aggregator is attached to other Aggregator blades.

For more information about using the Aggregator stacking feature, refer to the “Stacking Aggregators” chapter in the Dell Force10 Configuration Guide for the M I/O Aggregator.

Stacking Commands

You can use the following commands to manage a stack of Aggregator IO modules:

- power-cycle stack-unit
- reset stack-unit
- show system stack-ports
- show system stack-unit iom-mode
- show system stack-unit fanout
- show system stack-unit stack-group
- stack-unit iom-mode

power-cycle stack-unit

To hard reset any stack unit including master unit.

Syntax **power-cycle stack-unit** [0-5 | all]

Default None

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

This command is used to reset the stack-unit. The master unit can also be power cycled using this command.

reset stack-unit

Reset any designated stack member except the management unit (master unit).

Syntax **reset stack-unit** *0-5 hard*

Parameters

0-5	Enter the stack member unit identifier of the stack member to reset.
hard	Reset the stack unit if the unit is in a problem state.

Default none

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information

Resetting the management unit is not allowed (an error message is displayed if you try to do so). Resetting is a soft reboot, including flushing the forwarding tables.

You can run this command directly on the stack standby unit (Standby Master) to reset the standby. You cannot reset any other unit from the standby unit.

Example

Figure 21-1. reset stack-unit Command Example on the Stack Standby Unit

```
FTOS#show system brief

Stack MAC : 00:1e:c9:f1:00:9b

--  Stack Info  --
Unit  UnitType     Status         ReqTyp          CurTyp          Version     Ports
-------------------------------------------------------------------------------
---
  0   Management   online         I/O-Aggregator  I/O-Aggregator  8-3-17-46   56
  1   Standby      online         I/O-Aggregator  I/O-Aggregator  8-3-17-46   56
  2   Member       not present
  3   Member       not present
  4   Member       not present
  5   Member       not present

FTOS#
FTOS#reset stack-unit 0 <<Resetting master not allowed
% Error: Reset of master unit is not allowed.
FTOS#
FTOS#reset stack-unit 1
FTOS#01:02:00: %STKUNIT0-M:CP %CHMGR-5-STACKUNIT_RESET: Stack unit 1 being reset
01:02:00: %STKUNIT0-M:CP %IFMGR-1-DEL_PORT: Removed port: Te 1/1-32,41-56
01:02:00: %STKUNIT0-M:CP %CHMGR-2-STACKUNIT_DOWN: Stack unit 1 down - reset
01:02:00: %STKUNIT1-S:CP %IFMGR-1-DEL_PORT: Removed port: Te 1/1-32,41-56
01:02:05: %I/O-Aggregator:0 %IFAGT-5-STACK_PORT_LINK_DOWN: Changed stack port
state to down: 0/37
01:02:11: %STKUNIT0-M:CP %POLLMGR-2-ALT_STACK_UNIT_STATE: Alternate Stack-unit is
not present

FTOS#01:02:12: %STKUNIT0-M:CP %CHMGR-2-STACKUNIT_DOWN: Stack unit 1 down - card
removed
```

Related Commands

reload	Reboots FTOS.
power-cycle stack-unit	Resets the designated stack member.

show system stack-ports

Displays information about the stacking ports on all switches in the M I/O Aggregator switch stack.

Syntax **show system stack-ports** [**status** | **topology**]

Parameters

status	(OPTIONAL) Enter the keyword **status** to display the command output without the Connection field.
topology	(OPTIONAL) Enter the keyword **topology** to limit the table to just the Interface and Connection fields.

Defaults none

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 21-2. show system stack-ports Command Example

```
FTOS#show system stack-ports
Topology: Daisy chain
Interface  Connection    Link Speed      Admin     Link     Trunk
                           (Gb/s)        Status    Status   Group
-------------------------------------------------------------------
  0/33                      40             up        down
  0/37        1/37          40             up        up
  1/33                      40             up        down
  1/37        0/37          40             up        up
FTOS#
```

Example

Figure 21-3. show system stack-ports status Command Example

```
TOS#show system stack-ports status
Topology: Daisy chain
Interface  Link Speed       Admin     Link       Trunk
             (Gb/s)         Status    Status     Group
-----------------------------------------------------------
  0/33         40             up        down
  0/37         40             up        up
  1/33         40             up        down
  1/37         40             up        up
```

Example

Figure 21-4. show system stack-ports topology Command Example

```
FTOS#show system stack-ports topology
Topology: Daisy chain
Interface  Connection   Trunk
                        Group
----------------------------
  0/33
  0/37       1/37
  1/33
  1/37       0/37
FTOS#
```

Table 21-1. show system stack-ports Command Description

Field	Description
Topology	Lists the topology of stack ports connected: Ring, Daisy chain, or Standalone
Interface	The unit/port ID of the connected stack port on this unit
Link Speed	Link Speed of the stack port in Gb/s
Admin Status	The only currently listed status is Up.
Connection	The stack port ID to which this unit's stack port is connected

Related Commands

power-cycle stack-unit	Resets the designated stack member.
show diag	Displays the data plane or management plane input and output statistics of the designated component of the designated stack member.
show system	Displays the current status of all stack members or a specific member.

show system stack-unit iom-mode

Displays the current iom-mode (stack/standalone) and the mode configured after next reboot.

Syntax **show system stack-unit** <*unit-number*> **iom-mode[configured]**

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

show system stack-unit fanout

Displays the current 40GbE ports configured in fanout mode.

Syntax **show system stack-unit** <*unit-number*> **fanout [configured]**

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 21-5. show system stack-unit fanout Command Example

```
FTOS#show system stack-unit 0 fanout ?
configured              Configured fan out ports
FTOS#show system stack-unit 0 fanout configured ?
|                       Pipe through a command
<cr>

FTOS#show system stack-unit 0 fanout configured
Configured fan out ports in stack-unit 0
        Configured       Next Boot
           33              33
           37              37
           41              41
           45              45
FTOS#
```

show system stack-unit stack-group

Displays the stack-groups present/configured for a M I/O Aggregator stack unit.

Syntax **show system stack-unit** <*unit-number*> **stack-group [configured]**

Parameters

unit number <0-5>	Number of the member stack unit. Valid values: 0 to 5. Default: 0.

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Related Commands

reload	Reboots FTOS.
show system	Displays the current status of all stack members or a specific member.

Example

Figure 21-6. show system stack-unit stack-group Command Example

```
FTOS#show system stack-unit 0 stack-group ?
configured              Configured stack groups
|                       Pipe through a command
<cr>
FTOS#show system stack-unit 0 stack-group configured
Configured stack groups in stack-unit 0

FTOS##show system stack-unit 0 stack-group
Stack group             Ports
-----------------------------------
          0              0/33
          1              0/37
          2              0/41
          3              0/45
FTOS#
```

stack-unit iom-mode

Toggle the M I/O Aggregator operating mode from standalone to stack or vice-versa.

Syntax **stack-unit** <*unit-number*> **iom-mode** [stack | standalone]

Parameters

unit number <0-5>	Number of the member stack unit. Valid values: 0 to 5. Default: 0.
stack	Enable stack mode.
standalone	Enable stand-alone mode.

Defaults standalone

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Related Commands

reload	Reboots FTOS.
show system	Displays the current status of all stack members or a specific member.

Example

Figure 21-7. show system stack-unit stack-group Command Example

```
FTOS(conf)#stack-unit 0 iom-mode stack
% You are about to stack your IOA module, please reload the IOA
and then plug in the stacking cable for the changes to take effect.
FTOS(conf)#

FTOS#
```

22

Storm Control

Overview

The Dell Force10 operating software (FTOS) storm control feature allows users to limit or suppress traffic during a traffic storm.

Note: When iSCSI storage devices are detected on the server-ports, storm-control is disabled on the those ports. When the iSCSI devices are off the ports, storm-control is enabled again.

Storm Control Commands

The storm control commands are:

- io-aggregator broadcast storm-control
- show io-aggregator broadcast storm-control status

io-aggregator broadcast storm-control

Rate-limit the broadcast traffic to 1 Gbps.

Syntax io-aggregator broadcast storm-control

To disable storm control, use the no io-aggregator broadcast storm-control command.

Defaults Enabled

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

show io-aggregator broadcast storm-control status

Shows if storm control is enabled or disabled. If enabled, displays information on the rate limit value.

Syntax show io-aggregator broadcast storm-control status

Command Modes EXEC Privilege

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Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 22-1. calendar set Command Example

```
FTOS#show io-aggregator broadcast storm-control status
Storm-Control Enabled
Broadcast Traffic limited to 1000 Mbps
FTOS#
```

23

System Time

Overview

The commands in this chapter configure time values on the system, either using the Dell Force10 operating software (FTOS), the hardware, or using the network time protocol (NTP). With NTP, the switch can act only as a client to an NTP clock host. For more information, refer to the "Network Time Protocol" section of the Management chapter in the *Dell Force10 Configuration Guide for the M I/O Aggregator*.

Time Commands

The NTP commands are:

- calendar set
- show calendar
- show clock
- clock read-calendar
- clock set
- clock summer-time date
- clock summer-time recurring
- clock timezone
- clock update-calendar

calendar set

Set the time and date for the switch hardware clock.

Syntax **calendar set** *time month day year*

Parameters

time	Enter the time in hours:minutes:seconds. For the hour variable, use the 24-hour format, for example, 17:15:00 is 5:15 pm.
month	Enter the name of one of the 12 months in English. You can enter the name of a day to change the order of the display to *time day month year*.

day	Enter the number of the day. Range: 1 to 31. You can enter the name of a month to change the order of the display to *time day month year*.
year	Enter a four-digit number as the year. Range: 1993 to 2035.

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 23-1. calendar set Command Example

```
FTOS#calendar set 12:11:00 21 may 2012
FTOS#
```

Usage Information You can change the order of the *month* and *day* parameters to enter the time and date as *time day month year*.

In the switch, the hardware clock is separate from the software and is called the calendar. This hardware clock runs continuously. After the hardware clock (the calendar) is set, the FTOS automatically updates the software clock after system bootup.You cannot delete the hardware clock (calendar).

To manually update the software with the hardware clock, use the command clock read-calendar.

Related Commands

clock read-calendar	Sets the software clock based on the hardware clock.
clock set	Sets the software clock.
clock update-calendar	Sets the hardware clock based on the software clock.
show clock	Displays the clock settings.

show calendar

Displays the current date and time based on the switch hardware clock.

Syntax show calendar

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 23-2. show clock Command Example

```
FTOS#show calendar
12:29:34 pacific Tue May 22 2012
FTOS#
```

Related Commands		
	show clock	Displays the time and date from the switch software clock.

show clock

Displays the current clock settings.

Syntax show clock [detail]

Parameters

detail	(OPTIONAL) Enter the keyword **detail** to view the source information of the clock.

Command Modes EXEC

EXEC Privilege

Command History	
Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 23-3. show clock Command Example

```
FTOS#show clock
12:30:04.402 pacific Tue May 22 2012
FTOS#
```

Example

Figure 23-4. show clock detail Command Example

```
FTOS#show clock detail
12:30:26.892 pacific Tue May 22 2012
Time source is RTC hardware
Summer time starts 00:00:00 UTC Wed Mar 14 2012
Summer time ends 00:00:00 pacific Wed Nov 7 2012
FTOS#
```

Related Commands		
	clock summer-time recurring	Displays the time and date from the switch hardware clock.
	show calendar	Displays the time and date from the switch hardware clock.

clock read-calendar

Set the software clock on the switch from the information set in hardware clock (calendar).

Syntax **clock read-calendar**

Defaults Not configured.

Command Modes EXEC Privilege

Command History	
Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information In the switch, the hardware clock is separate from the software and is called the calendar. This hardware clock runs continuously. After the hardware clock (the calendar) is set, the FTOS automatically updates the software clock after system bootup.

You cannot delete this command (that is, there is not a “no” version of this command).

clock set

Set the software clock in the switch.

Syntax **clock set** *time month day year*

Parameters

time	Enter the time in hours:minutes:seconds. For the hour variable, use the 24-hour format, example, 17:15:00 is 5:15 pm.
month	Enter the name of one of the 12 months, in English. You can enter the number of a day and change the order of the display to *time day month year*.
day	Enter the number of the day. Range: 1 to 31. You can enter the name of a month to change the order of the display to *time month day year*.
year	Enter a four-digit number as the year. Range: 1993 to 2035.

Defaults Not configured

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 23-5. clock set Command Example

```
FTOS#clock set 12:11:00 21 may 2012
FTOS#
```

Usage Information You can change the order of the *month* and *day* parameters to enter the time and date as *time day month year*. You cannot delete the software clock.

The software clock runs only when the software is up. The clock restarts, based on the hardware clock, when the switch reboots.

Dell Force10 recommends using an outside time source, such as NTP, to ensure accurate time on the switch.

clock summer-time date

Set a date (and time zone) on which to convert the switch to daylight saving time on a one-time basis.

Syntax

clock summer-time *time-zone* **date** *start-month start-day start-year start-time end-month end-day end-year end-time* [*offset*]

To delete a daylight saving time zone configuration, use the no clock summer-time command.

Parameters

time-zone	Enter the three-letter name for the time zone. This name is displayed in the show clock output.
start-month	Enter the name of one of the 12 months in English. You can enter the name of a day to change the order of the display to *time day month year*.
start-day	Enter the number of the day. Range: 1 to 31. You can enter the name of a month to change the order of the display to *time day month year*.
start-year	Enter a four-digit number as the year. Range: 1993 to 2035.
start-time	Enter the time in hours:minutes. For the hour variable, use the 24-hour format, example, 17:15 is 5:15 pm.
end-day	Enter the number of the day. Range: 1 to 31. You can enter the name of a month to change the order of the display to *time day month year*.
end-month	Enter the name of one of the 12 months in English. You can enter the name of a day to change the order of the display to *time day month year*.
end-time	Enter the time in hours:minutes. For the hour variable, use the 24-hour format, example, 17:15 is 5:15 pm.
end-year	Enter a four-digit number as the year. Range: 1993 to 2035.
offset	(OPTIONAL) Enter the number of minutes to add during the summer-time period. Range: 1 to1440. Default: 60 minutes

Defaults

Not configured.

Command Modes

CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Related Commands

calendar set	Sets the hardware clock.

clock summer-time recurring	Sets a date (and time zone) on which to convert the switch to daylight saving time each year.
show clock	Displays the current clock settings.

clock summer-time recurring

Set the software clock to convert to daylight saving time on a specific day each year.

Syntax

clock summer-time *time-zone* **recurring** [*start-week start-day start-month start-time end-week end-day end-month end-time* [*offset*]]

To delete a daylight saving time zone configuration, use the no clock summer-time command.

Parameters

time-zone	Enter the three-letter name for the time zone. This name is displayed in the show clock output. You can enter up to eight characters.
start-week	(OPTIONAL) Enter one of the following as the week that daylight saving begins and then enter values for *start-day* through *end-time*: • *week-number:* Enter a number from 1-4 as the number of the week in the month to start daylight saving time. • **first:** Enter this keyword to start daylight saving time in the first week of the month. • **last:** Enter this keyword to start daylight saving time in the last week of the month.
start-day	Enter the name of the day that you want daylight saving time to begin. Use English three letter abbreviations, for example, Sun, Sat, Mon, etc. Range: Sun – Sat
start-month	Enter the name of one of the 12 months in English.
start-time	Enter the time in hours:minutes. For the hour variable, use the 24-hour format, example, 17:15 is 5:15 pm.
end-week	Enter the one of the following as the week that daylight saving ends: • *week-number:* enter a number from 1-4 as the number of the week to end daylight saving time. • **first:** enter the keyword first to end daylight saving time in the first week of the month. • **last:** enter the keyword last to end daylight saving time in the last week of the month.
end-day	Enter the weekday name that you want daylight saving time to end. Enter the weekdays using the three letter abbreviations, for example Sun, Sat, Mon etc. Range: Sun to Sat
end-month	Enter the name of one of the 12 months in English.
end-time	Enter the time in hours:minutes:seconds. For the hour variable, use the 24-hour format, example, 17:15:00 is 5:15 pm.
offset	(OPTIONAL) Enter the number of minutes to add during the summer-time period. Range: 1 to 1440. Default: 60 minutes.

Defaults

Not configured.

Command Modes

CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Related Commands

calendar set	Sets the hardware clock.
clock summer-time date	Sets a date (and time zone) on which to convert the switch to daylight saving time on a one-time basis.
show clock	Displays the current clock settings.

clock timezone

Configure a timezone for the switch.

Syntax **clock timezone** *timezone-name offset*

To delete a timezone configuration, use the no clock timezone command.

Parameters

timezone-name	Enter the name of the timezone. You cannot use spaces.
offset	Enter one of the following: • a number from 1 to 23 as the number of hours in addition to UTC for the timezone. • a minus sign (-) followed by a number from 1 to 23 as the number of hours

Default Not configured.

Command Modes CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information Coordinated universal time (UTC) is the time standard based on the International Atomic Time standard, commonly known as Greenwich Mean time. When determining system time, you must include the differentiator between UTC and your local timezone. For example, San Jose, CA is the Pacific Timezone with a UTC offset of -8.

clock update-calendar

Set the switch hardware clock based on the software clock.

Syntax **clock update-calendar**

Defaults Not configured.

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information Use this command only if you are sure that the hardware clock is inaccurate and the software clock is correct.

You cannot delete this command (that is, there is not a “no” form of this command).

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Related Commands		
	calendar set	Sets the hardware clock.

24

Uplink Failure Detection (UFD)

Overview

Uplink failure detection (UFD) provides detection of the loss of upstream connectivity and, if used with network interface controller (NIC) teaming, automatic recovery from a failed link.

UFD Commands

The UFD commands are:

- debug uplink-state-group
- show running-config uplink-state-group
- show uplink-state-group

debug uplink-state-group

Enable debug messages for events related to a specified uplink-state group or all groups.

Syntax **debug uplink-state-group** [*group-id*]

To turn off debugging event messages, use the **no debug uplink-state-group** [*group-id*] command.

Parameters

group-id	Enables debugging on the specified uplink-state group. Valid *group-id* values are 1 to 16.

Defaults none

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

show running-config uplink-state-group

Displays the current configuration of one or more uplink-state groups.

Syntax **show running-config uplink-state-group** [*group-id*]

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Parameters

group-id	Displays the current configuration of all uplink-state groups or a specified group. Valid *group-id* values are 1 to 16.

Defaults none

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 24-1. show running-config uplink-state-group Command Example

```
FTOS#sho running-config uplink-state-group
!
uplink-state-group 1
 downstream TenGigabitEthernet 0/1-32
 downstream TenGigabitEthernet 1/1-32
 upstream Port-channel 128
 defer-timer 10
FTOS#
```

Related Commands

show uplink-state-group	Displays status information on a specified uplink-state group or all groups.

show uplink-state-group

Displays status information on a specified uplink-state group or all groups.

Syntax **show uplink-state-group** [*group-id*] [detail]

Parameters

group-id	Displays status information on a specified uplink-state group or all groups. Valid *group-id* values are 1 to 16.
detail	Displays additional status information on the upstream and downstream interfaces in each group

Defaults none

Command Modes EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example

Figure 24-2. show uplink-state-group Command Examples

```
FTOS#show uplink-state-group Command Example

FTOS#show uplink-state-group

Uplink State Group: 1   Status: Enabled, Down
FTOS#
FTOS#show uplink-state-group 1

Uplink State Group: 1   Status: Enabled, Down
FTOS#
FTOS#
FTOS#show uplink-state-group 1 detail

(Up): Interface up   (Dwn): Interface down   (Dis): Interface disabled

Uplink State Group    : 1       Status: Enabled, Down
Defer Timer           : 10 sec
Upstream Interfaces   : Po 128(Dwn)
Downstream Interfaces : Te 0/1(Dis) Te 0/2(Dis) Te 0/3(Dis) Te 0/4(Dis) Te 0/
5(Dis)
                        Te 0/6(Dis) Te 0/7(Dis) Te 0/8(Dis) Te 0/9(Dis) Te 0/
10(Dis)
                       Te 0/11(Dis) Te 0/12(Dis) Te 0/13(Dis) Te 0/14(Dis) Te 0/
15(Dis)
                       Te 0/16(Dis) Te 0/17(Dis) Te 0/18(Dis) Te 0/19(Dis) Te 0/
20(Dis)
                       Te 0/21(Dis) Te 0/22(Dis) Te 0/23(Dis) Te 0/24(Dis) Te 0/
25(Dis)
                       Te 0/26(Dis) Te 0/27(Dis) Te 0/28(Dis) Te 0/29(Dis) Te 0/
30(Dis)
                       Te 0/31(Dis) Te 0/32(Dis) Te 1/1(Dis) Te 1/2(Dis) Te 1/
3(Dis)
                      Te 1/4(Dis) Te 1/5(Dis) Te 1/6(Dis) Te 1/7(Dis) Te 1/8(Dis)
                       Te 1/9(Dis) Te 1/10(Dis) Te 1/11(Dis) Te 1/12(Dis) Te 1/
13(Dis)
                       Te 1/14(Dis) Te 1/15(Dis) Te 1/16(Dis) Te 1/17(Dis) Te 1/
18(Dis)
                       Te 1/19(Dis) Te 1/20(Dis) Te 1/21(Dis) Te 1/22(Dis) Te 1/
23(Dis)
                       Te 1/24(Dis) Te 1/25(Dis) Te 1/26(Dis) Te 1/27(Dis) Te 1/
28(Dis)
                       Te 1/29(Dis) Te 1/30(Dis) Te 1/31(Dis) Te 1/32(Dis)

FTOS#
```

Related Commands

show running-config uplink-state-group	Displays the current configuration of one or more uplink-state groups.

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25

Debugging and Diagnostics

This chapter contains three sections:

- Offline Diagnostic Commands
- Hardware Commands

Offline Diagnostic Commands

The offline diagnostics test suite is useful for isolating faults and debugging hardware. While tests are running, the Dell Force10 operating software (FTOS) results are saved as a text file (TestReport-SU-X.txt) in the flash directory. The show file command is available only on Master and Standby.

Important Points to Remember

- Offline diagnostics can only be run when the unit is offline.
- Offline diagnostics cannot be run in Stacking mode.
- You can only run offline diagnostics on a unit to which you are connected via the console. In other words, you cannot run diagnostics on a unit to which you are connected via a stacking link.
- Diagnostic results are stored in a file (TestReport-SU-X.txt) in the flash directory. To review the results, use the show file command, which prints the results to the screen.
- Diagnostics only test connectivity, not the entire data path.

The offline diagnostics commands are:

- diag stack-unit
- offline stack-unit
- online stack-unit
- show diag

Hardware Commands

These commands display information from a hardware sub-component or ASIC.

The hardware commands are:

- clear hardware stack-unit
- hardware watchdog
- show diag

- show hardware stack-unit
- show hardware system-flow

clear hardware stack-unit

Clear statistics from selected hardware components.

Syntax

clear hardware stack-unit *0–5* {counters | unit *0–1* counters | cpu data-plane statistics | cpu party-bus statistics | stack-port *0–52*}

Parameters

stack-unit *0-5*	Enter the keyword stack-unit followed by 0 to 5 to select a particular stack member and then enter one of the following command options to clear a specific collection of data.
counters	Enter the keyword counters to clear the counters on the selected stack member.
unit *0–0* counters	Enter the keyword unit along with a port-pipe number, from *0* to *1*, followed by the keyword counters to clear the counters on the selected port-pipe.
cpu data-plane statistics	Enter the keywords cpu data-plane statistics to clear the data plane statistics.
cpu party-bus statistics	Enter the keywords cpu party-bus statistics to clear the management statistics.
stack-port *33–56*	Enter the keyword stack-port followed by the port number of the stacking port to clear the statistics of the particular stacking port. Range: 33 to 56 **Note**: You can identify stack port numbers by physical inspection of the rear modules. The numbering is the same as for the 10G ports. You can also inspect the output of the show system stack-ports command.

Defaults

none

Command Modes

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Related Commands

show diag	Displays the data plane or management plane input and output statistics of the designated component of the designated stack member.

diag stack-unit

Run offline diagnostics on a stack unit.

Syntax **diag stack-unit** *number* {**alllevels** | **level0** | **level1** | **level2** [verbose no-reboot] | terminate | interactive {test <id>}

number	Enter the stack-unit number. Range: 0 to 5
alllevels	Enter the keyword **alllevels** to run the complete set of offline diagnostic tests.
level0	Enter the keyword **level0** to run Level 0 diagnostics. Level 0 diagnostics check for the presence of various components and perform essential path verifications. In addition, they verify the identification registers of the components on the board.
level1	Enter the keyword **Level1** to run Level 1 diagnostics. Level 1 diagnostics is a smaller set of diagnostic tests with support for automatic partitioning. They perform status/self test for all the components on the board and test their registers for appropriate values. In addition, they perform extensive tests on memory devices (e.g., SDRAM, flash, NVRAM, EEPROM, and CPLD) wherever possible. There are no tests on 10G links. At this level, stack ports are shut down automatically.
level2	Enter the keyword **level2** to run Level 2 diagnostics. Level 2 diagnostics is a full set of diagnostic tests with no support for automatic partitioning. Level 2 diagnostics are used primarily for on-board loopback tests and more extensive component diagnostics. Various components on the board are put into loop back mode, and test packets are transmitted through those components. These diagnostics also perform snake tests using VLAN configurations. You must physically remove the unit from the stack to test 10G links.
verbose	Enter the keyword **verbose** to run the diagnostic in verbose mode. Verbose mode gives more information in the output than standard mode.
no-reboot	Enter the keyword **no-reboot** to avoid automatic rebooting of the chassis after completion of diagnostic execution. Generally, this option is never used because if you run the diagnostic once again without rebooting the chassis, it may cause an issue with the diagnostic results.
terminate	Enter the keyword **terminate** to stop the execution of the level diag that is already started using the diag stack-unit command. Once this CLI is issued, syslogs indicating the termination of the diag test is displayed. The diag results for the executed tests are stored in the flash directory (TestReport-SU-X.txt).
interactive	Enter the keyword **interactive** to run some individual diag tests such as POWERLEDTEST, STATUSLEDTEST and so on. The help option under the interactive command displays the list of tests that can be run.

Defaults none

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

hardware watchdog

Set the watchdog timer to trigger a reboot and restart the system.

Syntax **hardware watchdog**

Defaults Enabled

Command Mode CONFIGURATION

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information This command enables a hardware watchdog mechanism that automatically reboots an FTOS switch/router with a single unresponsive unit. This is a last resort mechanism intended to prevent a manual power cycle.

offline stack-unit

Place a stack unit in the offline state.

Syntax **offline stack-unit** *number*

Parameters

number	Enter the stack unit number. Range: 0 to 5

Defaults none

Command Mode EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Usage Information While executing the offline stack unit CLI, the following warning message is displayed:

```
Warning - offline of stack unit will bring down all the protocols and the
unit will be operationally down, except for running Diagnostics.
```

Make sure that stacking is not configured for Diagnostics execution.Also, reboot/online command is necessary for normal operation after the offline command is issued.

online stack-unit

Place a stack unit in the online state.

Syntax **online stack-unit** *number*

Parameters

number	Enter the stack unit number. range: 0 to 5

Defaults none

Command Mode EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

show diag

View diagnostics information.

Syntax

show diag {information | stack-unit number [detail | periodic | summary] | testcase}

Parameters

information	Enter the keyword information to view current diagnostics information in the system.
stack-unit *unit-id*	Enter the keyword stack-unit followed by the *unit-id* to display information on a specific stack member. Range: 0 to 5.
detail	(OPTIONAL) Enter the keyword detail to view detailed diagnostics information.
summary	(OPTIONAL) Enter the keyword summary to view a summary of the diagnostics information. By default, the summary is displayed.
testcase	Enter the keyword testcase to view to view the list of all the diag tests available.

Defaults

Summary

Command Modes

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example 1

Figure 25-1. show diag information Command Example

```
FTOS#show diag information
Diag information:
Diag software image version:
8-3-17-36
------------------------------------------------------------------
  Stack-unit Member  0:     Unit diags are terminated (Stackunit Offline).
  Stack-unit Member  1:     Not present.
  Stack-unit Member  2:     Not present.
  Stack-unit Member  3:     Not present.
  Stack-unit Member  4:     Not present.
  Stack-unit Member  5:     Not present.
------------------------------------------------------------------
```

Example 2

Figure 25-2. show diag stack-unit Command Example

```
FTOS#show diag stackunit 0
Diag status of Stackunit member 0:
-------------------------------------------------------------------------------
    Stackunit is currently offline.
    Stackunit level0 diag issued at Tue May 15, 2012 11:11:47 AM.
    Current diag status:             Unit diags are terminated.
    Total number of diags:           17
    Number of diags performed:       1
    Number of diags passed:          1
    Number of diags failed:          0
    Number of diags pending:         16
    Last Test executed:              POWERRAILSTATUSTEST
    Last notification received at:   Tue May 15, 2012 11:12:24 AM

-------------------------------------------------------------------------------
```

Example 3 **Figure 25-3. show diag testcase stack-unit Command Example**

```
FTOS#show diag testcase stack-unit 0

*************************** Navasota Diagnostics Test
************************

Test ID    Test Description                 Test Level
-------    ----------------                 ----------
1          POWERRAILSTATUSTEST              Level0
2          OPTMODSLOTPOWERSTATUSTEST        Level0
3          TSENSORACCESSTEST                Level0
4          RTCPRESENCETEST                  Level0
5          CPUSDRAMPRESENCETEST             Level0
6          CPUSDRAMSIZETEST                 Level0
7          USBAACCESSTEST                   Level0
8          USBHOSTCONTROLLERACCESSTEST      Level0
9          SDFLASHACCESSTEST                Level0
10         QSFPPLUSPOWERMODETEST            Level0
11         CPLDPRESENCETEST                 Level0
12         FLASHACCESSTEST                  Level0
13         BOARDREVTEST                     Level0
14         MGMTPHYPRESENCETEST              Level0
15         OPTMODTYPETEST                   Level0
16         QSFPPLUSPRESENCETEST             Level0
17         CPUTYPEDETECTTEST                Level0
101        RTCFUNCTIONTEST                  Level1
102        RTCROLLOVERTEST                  Level1
103        GPIOACCESSTEST                   Level1
104        PSOCACCESSTEST                   Level1
105        PCIEBCM56846ACCESSTEST           Level1
106        CPUSDRAMACCESSTEST               Level1
107        CPUSDRAMDATALINETEST             Level1
108        CPUSDRAMADDRESSLINETEST          Level1
109        USBFILECOPYTEST                  Level1
110        FLASHRWTEST                      Level1
111        I2CSTRESSTEST                    Level1
112        AVSPOWERCNTRLACCESSTEST          Level1
113        SERVERPORTPHYACCESSTEST          Level1
114        SERVERPORTPHYRWTEST              Level1
115        QSFPPLUSPHYACCESSTEST            Level1
116        QSFPPLUSPHYRWTEST                Level1
117        QSFPPLUSPHYEXTLINKTEST           Level1
118        QSFPPLUSEEPROMTEST               Level1
119        OPTMODPHYACCESSTEST              Level1
120        OPTMODPHYRWTEST                  Level1
121        OPTMODPHYEXTLINKTEST             Level1
122        OPTMODMODULEEEPROMTEST           Level1
123        MGMTPHYACCESSTEST                Level1
124        SDFLASHFILECOPYSTRESSTEST        Level1
201        QSFPPLUSPHYLNKSPEEDTEST          Level2
202        OPTMODPHYLNKSPEEDTEST            Level2
203        MGMTPHYLOOPBACKTEST              Level2
204        MGMTMACLOOPBACKTEST              Level2
205        CPUSNAKESERVERPORTPHYLPBKTEST    Level2
206        CPUSNAKESERVERPORTMACLPBKTEST    Level2
207        CPUSNAKEQSFPPPHYLPBKTEST         Level2
208        CPUSNAKEQSFPPMACLPBKTEST         Level2
209        CPUSNAKEOPTMODPHYLPBKTEST        Level2
210        CPUSNAKEOPTMODMACLPBKTEST        Level2

Total Diagnostic Testcases in All Levels: 51

********************************** END
**********************************
```

Example 4 **Figure 25-4. show diag testcase stack-unit interactive Command Example**

```
FTOS#show diag testcase stack-unit 0 interactive

*************************** Navasota Diagnostics Test
************************

Test ID    Test Description                Test Level
-------    ----------------                ----------
401        POWERLEDTEST                    Interactive
402        DEBUGLEDTEST                    Interactive
403        STATUSLEDTEST                   Interactive
404        OPTMODLEDCONTROLTEST            Interactive
405        FIXEDLEDCONTROLTEST             Interactive
406        RTCBATTERYTEST                  Interactive
407        CPLDRESETTEST                   Interactive
408        I2CDEVICESCANTEST               Interactive
409        SERVERPORTPHYEXTLINKTEST        Interactive
410        CPUSNAKEQSFPPEXTLPBKTEST        Interactive
411        CPUSNAKEOPTMODEXTLPBKTEST       Interactive

Total Diagnostic Testcases in Interactive: 11

********************************** END
**********************************
```

show hardware stack-unit

Displays the data plane or management plane input and output statistics of the designated component of the designated stack member.

Syntax show hardware stack-unit *0-5* {buffer [buffer unit | port [(*1-56)* | all] total buffer | buffer unit (*1*) port (*1-56*) queue [(*0-14*) | a11] buffer-info} {phy-firmware-version} {cpu data-plane statistics [stack-port *0-52*] | cpu party-bus statistics | cpu private-mgmt statistics | drops [unit *0-1* [port *1-56*]] | stack-port *33-56* | unit *0-0* {counters | details | port-stats [detail] | register}}

Parameters

stack-unit *0-5* {*command-option*}	Enter the keyword stack-unit followed by 0 to 5 to select a particular stack member and then enter one of the following command options to display a collection of data based on the option entered.
buffer	Enter the keyword buffer, optionally followed by the keywords total-buffer to show the total buffer statistics per stack unit. Enter the keywords buffer unit then total-buffer to display the buffer details per unit and mode of allocation. To display the forwarding plane statistics containing the packet buffer usage per port per stack unit, enter the keywords buffer unit followed by port and the port number (*1-56* or all), then buffer-info. To display the forwarding plane statistics containing the packet buffer statistics per COS per port, enter the keywords buffer unit and port (*1-56)*, and queue (*0-14* or all), and buffer-info. Buffer unit default: 1
fpga	Enter the keyword fpga, to display fpga details.
fru	Enter the keyword fru, to display fru details.
phy-firmware-version	Each member of the stack is updated automatically with the latest firmware while booting as well as during OIR. Enter the keyword phy-firmware-version, to dump the physical firmware version for stack units.

cpu data-plane statistics	Enter the keywords cpu data-plane statistics, optionally followed by the keywords stack port and its number — 0 to 52 — to display the data plane statistics, which shows the High Gig (Higig) port raw input/output counter statistics to which the stacking module is connected.
cpu party-bus statistics	Enter the keywords cpu party-bus statistics, to display the Management plane input/output counter statistics of the pseudo party bus interface.
cpu private-mgmt statistics	Enter the keywords cpu private-mgmt statistics, to display the Management plane input/output counter statistics of the Private Management interface.
drops [unit *0-0* [port *1-56*]]	Enter the drops keyword to display internal drops on the selected stack member. Optionally, use the unit keyword with 0 to select port-pipe 0, and then use port *1-56* to select a port on that port-pipe.
stack-port *33-56*	Enter this keyword and a stacking port number to select a stacking port for which to display statistics. Identify the stack port number as you would to identify a 10G port that was in the same place in one of the rear modules. **Note:** You can identify stack port numbers by physical inspection of the rear modules. The numbering is the same as for the 10G ports. You can also inspect the output of the show system stack-ports command.
unit *0-0* {counters | details | port-stats [detail] | register}	Enter the unit keyword followed by 0 for port-pipe 0, and then enter one of the following keywords to troubleshoot errors on the selected port-pipe and to give status on why a port is not coming up to register level: counters, details, port-stats [detail], or register

Defaults

none

Command Modes

EXEC

EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example 1

Figure 25-5. show hardware stack-unit phy-firmware-version Command Example

```
FTOS#show hardware stack-unit 1 phy-firmware-version

PortNumber     Status            Programmed Version       SW Version
=====================================================================
41             Present              01.05                  01.05
42             Present              01.05                  01.05
43             Present              01.05                  01.05
44             Present              01.05                  01.05
45             Not Present          N/A                    N/A
46             Not Present          N/A                    N/A
47             Not Present          N/A                    N/A
48             Not Present          N/A                    N/A
49             Present              01.06                  01.06
50             Present              01.06                  01.06
51             Present              01.06                  01.06
52             Present              01.06                  01.06
53             Present              01.06                  01.06
54             Present              01.06                  01.06
55             Present              01.06                  01.06
56             Present              01.06                  01.06
FTOS#
```

In the above example, the “Status” field represents presence of OPTM ports, “Programmed version” field represents loaded firmware version, and “SW version” represents SDK version.

Example 2 **Figure 25-6. show hardware stack-unit cpu data-plane statistics Command Example**

```
FTOS#show hardware stack-unit 1 cpu data-plane statistics

bc pci driver statistics for device:
 rxHandle        :7392
 noMhdr          :0
 noMbuf          :0
 noClus          :0
 recvd           :7392
 dropped         :0
 recvToNet       :7392
 rxError         :0
 rxDatapathErr   :0
 rxPkt(COS0)     :0
 rxPkt(COS1)     :0
 rxPkt(COS2)     :10
 rxPkt(COS3)     :0
 rxPkt(COS4)     :0
 rxPkt(COS5)     :338
 rxPkt(COS6)     :0
 rxPkt(COS7)     :7044
 rxPkt(UNIT0)    :7392
 transmitted     :29899
 txRequested     :29899
 noTxDesc        :0
 txError         :0
 txReqTooLarge   :0
 txInternalError :0
 txDatapathErr   :0
 txPkt(COS0)     :0
 txPkt(COS1)     :0
 txPkt(COS2)     :0
 txPkt(COS3)     :0
 txPkt(COS4)     :0
 txPkt(COS5)     :0
 txPkt(COS6)     :0
 txPkt(COS7)     :0
 txPkt(UNIT0)    :0
FTOS#
```

Example 3 **Figure 25-7. show hardware stack-unit cpu party-bus statistics Command Example**

```
FTOS#show hardware stack-unit 1 cpu party-bus statistics
Input Statistics:
    8189 packets, 8076608 bytes
    0 dropped, 0 errors
Output Statistics:
    366 packets, 133100 bytes
    0 errors
FTOS#
```

Example 4 **Figure 25-8. show hardware stack-unit drops (drop summary for entire switch) Command Example**

```
FTOS#show hardware stack-unit 1 drops

UNIT No: 0

Total Ingress Drops           : 7448
Total IngMac Drops            : 0
Total Mmu Drops               : 0
Total EgMac Drops             : 0
Total Egress Drops            : 16
FTOS#
```

Example 5 **Figure 25-9. show hardware stack-unit drops unit (drop summary per port) Command Example**

```
FTOS#show hardware stack-unit 1 drops unit 0

UserPort    PortNumber    Ingress Drops   IngMac Drops    Total Mmu Drops  EgMac
Drops    Egress Drops
 1            1             0            0            0             0
0
 2            2             0            0            0             0
0
 3            3             0            0            0             0
0
 4            4             0            0            0             0
0
 5            5             728          0            0             0
5
 6            6             0            0            0             0
0
 7            7             0            0            0             0
0
 8            8             0            0            0             0
0
 9            9             0            0            0             0
0
 10           10            0            0            0             0
0
--More--
FTOS#
```

Example 6 **Figure 25-10. show hardware stack-unit drops (drop counters per port) Command Example**

```
FTOS#show hardware stack-unit 1 drops unit 0 port 27
 --- Ingress Drops      ---
Ingress Drops                : 0
IBP CBP Full Drops           : 0
PortSTPnotFwd Drops          : 0
IPv4 L3 Discards             : 0
Policy Discards              : 0
Packets dropped by FP        : 0
(L2+L3) Drops                : 0
Port bitmap zero Drops       : 0
Rx VLAN Drops                : 0
 --- Ingress MAC counters---
Ingress FCSDrops             : 0
Ingress MTUExceeds           : 0
 --- MMU Drops          ---
HOL DROPS                    : 0
TxPurge CellErr              : 0
Aged Drops                   : 0
 --- Egress MAC counters---
Egress FCS Drops             : 0
 --- Egress FORWARD PROCESSOR Drops   ---
IPv4 L3UC Aged & Drops       : 0
TTL Threshold Drops          : 0
INVALID VLAN CNTR Drops      : 0
L2MC Drops                   : 0
PKT Drops of ANY Conditions  : 0
Hg MacUnderflow              : 0
TX Err PKT Counter           : 0 25
FTOS#
```

Example 7 **Figure 25-11. show hardware stack-unit port-statistics Command Example**

```
FTOS#show hardware stack-unit 1 unit 0 port-stats
           ena/  speed/ link auto    STP                  lrn  inter   max  loop
      port link  duplex scan neg?   state   pause  discrd ops   face frame  back
       xe0  !ena   1G FD   SW  Yes  Forward           Tag    F   GMII  1550
       xe1  !ena   1G FD   SW  Yes  Forward           Tag    F   GMII  1554
       xe2  up     1G FD   SW  Yes  Forward          None   FA   GMII 11996
       xe3  !ena   1G FD   SW  Yes  Forward           Tag    F   GMII  1550
       xe4  down  10G FD   SW  Yes    Block          None   FA     KR  8996
       xe5  !ena   1G FD   SW  Yes  Forward           Tag    F   GMII  1550
       xe6  !ena   1G FD   SW  Yes  Forward           Tag    F   GMII  1550
       xe7  !ena   1G FD   SW  Yes  Forward           Tag    F   GMII  1550
       xe8  !ena   1G FD   SW  Yes  Forward           Tag    F   GMII  1550
       xe9  !ena   1G FD   SW  Yes  Forward           Tag    F   GMII  1550
      xe10  down  10G FD   SW  Yes  Forward           Tag    F     KR  1550
      xe11  !ena   1G FD   SW  Yes  Forward           Tag    F   GMII  1550
      xe12  !ena   1G FD   SW  Yes    Block          None   FA   GMII 11996
      xe13  !ena   1G FD   SW  Yes  Forward           Tag    F   GMII  1550
      xe14  !ena   1G FD   SW  Yes  Forward           Tag    F   GMII  1550
      xe15  !ena   1G FD   SW  Yes  Forward           Tag    F   GMII  1550
      xe16  !ena   1G FD   SW  Yes  Forward           Tag    F   GMII  1550
      xe17  !ena   1G FD   SW  Yes  Forward           Tag    F   GMII  1550
      xe18  down   1G FD   SW  Yes  Forward           Tag    F   GMII  1550
      xe19  !ena   1G FD   SW  Yes  Forward           Tag    F   GMII  1550
      xe20  down   1G FD   SW  Yes  Forward           Tag    F   GMII  1550
--More--
FTOS#
```

Example 8 **Figure 25-12. show hardware stack-unit unit 0 register Command Example**

```
FTOS#show hardware stack-unit 0 unit 0 register
0x0f180d34 ALTERNATE_EMIRROR_BITMAP_PARITY_CONTROL.ipipe0 = 0x00000001
0x0f180d35 ALTERNATE_EMIRROR_BITMAP_PARITY_STATUS_INTR.ipipe0 = 0x00000000
0x0f180d36 ALTERNATE_EMIRROR_BITMAP_PARITY_STATUS_NACK.ipipe0 = 0x00000000
0x0018070c ARB_EOP_DEBUG.ipipe0 = 0x00000000
0x00180312 ARB_RAM_DBGCTRL.ipipe0 = 0x00000000
0x03300000 ASF_PORT_SPEED.cpu0 = 0x00000000
0x03322000 ASF_PORT_SPEED.xe0 = 0x00000000
0x03326000 ASF_PORT_SPEED.xe1 = 0x00000000
0x0332a000 ASF_PORT_SPEED.xe2 = 0x00000007
0x0332e000 ASF_PORT_SPEED.xe3 = 0x00000000
0x03323000 ASF_PORT_SPEED.xe4 = 0x00000000
0x03327000 ASF_PORT_SPEED.xe5 = 0x00000000
0x0332b000 ASF_PORT_SPEED.xe6 = 0x00000000
0x0332f000 ASF_PORT_SPEED.xe7 = 0x00000000
0x03324000 ASF_PORT_SPEED.xe8 = 0x00000000
0x03328000 ASF_PORT_SPEED.xe9 = 0x00000000
0x0332c000 ASF_PORT_SPEED.xe10 = 0x00000000
0x03330000 ASF_PORT_SPEED.xe11 = 0x00000000
0x03325000 ASF_PORT_SPEED.xe12 = 0x00000000
0x03329000 ASF_PORT_SPEED.xe13 = 0x00000000
0x0332d000 ASF_PORT_SPEED.xe14 = 0x00000000
0x03331000 ASF_PORT_SPEED.xe15 = 0x00000000
0x03332000 ASF_PORT_SPEED.xe16 = 0x00000000
0x03336000 ASF_PORT_SPEED.xe17 = 0x00000000
0x0333a000 ASF_PORT_SPEED.xe18 = 0x00000000
0x0333e000 ASF_PORT_SPEED.xe19 = 0x00000000
0x03333000 ASF_PORT_SPEED.xe20 = 0x00000000
0x03337000 ASF_PORT_SPEED.xe21 = 0x00000000
0x0333b000 ASF_PORT_SPEED.xe22 = 0x00000000
0x0333f000 ASF_PORT_SPEED.xe23 = 0x00000000
0x03334000 ASF_PORT_SPEED.xe24 = 0x00000000
0x03338000 ASF_PORT_SPEED.xe25 = 0x00000000
0x0333c000 ASF_PORT_SPEED.xe26 = 0x00000000
0x03340000 ASF_PORT_SPEED.xe27 = 0x00000000
0x03335000 ASF_PORT_SPEED.xe28 = 0x00000000
0x03339000 ASF_PORT_SPEED.xe29 = 0x00000000
!------------------ output truncated ---------------!
```

Example 9 **Figure 25-13. show hardware stack-unit unit details Command Example**

```
FTOS#show hardware stack-unit 0 unit 0 details

*****************************************************

The total no of FP & CSF Devices in the Card is 1
The total no of FP Devices in the Card is 1
The total no of CSF Devices in the Card is 0
The number of ports in device 0 is - 49
The number of Hg ports in devices 0 is - 1
The CPU Port of the device is 0
The staring unit no the SWF in the device is 0
*****************************************************

bcmLinkMonStatusShow: The Current Link Status Is

Front End Link Status         0x20000000000000000000000
Front End Port Present Status 0x00000000000000000000000
Back Plane Link Status        0x00000000

*****************************************************

Link Status of all the ports in the Device - 0

The linkStatus of Front End Port 1 is FALSE
The linkStatus of Front End Port 2 is FALSE
The linkStatus of Front End Port 3 is TRUE
The linkStatus of Front End Port 4 is FALSE
The linkStatus of Front End Port 5 is FALSE
The linkStatus of Front End Port 6 is FALSE
The linkStatus of Front End Port 7 is FALSE
The linkStatus of Front End Port 8 is FALSE
The linkStatus of Front End Port 9 is FALSE
The linkStatus of Front End Port 10 is FALSE
The linkStatus of Front End Port 11 is FALSE
The linkStatus of Front End Port 12 is FALSE
The linkStatus of Front End Port 13 is FALSE
The linkStatus of Front End Port 14 is FALSE
The linkStatus of Front End Port 15 is FALSE
The linkStatus of Front End Port 16 is FALSE
The linkStatus of Front End Port 17 is FALSE
The linkStatus of Front End Port 18 is FALSE
The linkStatus of Front End Port 19 is FALSE
The linkStatus of Front End Port 20 is FALSE
The linkStatus of Front End Port 21 is FALSE
The linkStatus of Front End Port 22 is FALSE
The linkStatus of Front End Port 23 is FALSE
The linkStatus of Front End Port 24 is FALSE
The linkStatus of Front End Port 25 is FALSE
The linkStatus of Front End Port 26 is FALSE
The linkStatus of Front End Port 27 is FALSE
The linkStatus of Front End Port 28 is FALSE
The linkStatus of Front End Port 29 is FALSE
The linkStatus of Front End Port 30 is FALSE
The linkStatus of Front End Port 31 is FALSE
The linkStatus of Front End Port 32 is FALSE
The linkStatus of Front End Port 37 is FALSE
!------------------ output truncated ---------------!
```

Example 10 **Figure 25-14. show hardware stack-unit per stack unit buffer Command Example**

```
FTOS#show hardware stack-unit 0 buffer total-buffer

FTOS#sh hardware stack-unit 0 buffer total-buffer

Total Buffers allocated per Stack-Unit 46080
```

Example 11

Figure 25-15. show hardware stack-unit per port buffer (a Specific Port) Command Example

```
FTOS(conf)#show hardware stack-unit 0 buffer unit 0 port 1 buffer-info
-----  Buffer Stats for Unit 0 Port 1 -----
Maximum Shared Limit for the Port: 30720
Default Packet Buffer allocate for the Port: 120
Used Packet Buffer for the Port: 0
```

Example 12

Figure 25-16. show hardware stack-unit queue buffer Command Example

```
FTOS(conf)#show hardware stack-unit 0 buffer unit 0 port 1 queue 2 buffer-info

-----  Buffer Stats for Unit 0 Port 1 Queue 2 -----
 Maximum Shared Limit: 30720
 Default Packet Buffer allocate for the Queue: 8
 Used Packet Buffer: 0
```

Related Commands

show interfaces port-channel	Displays information on all interfaces on a specific stack member.
show processes cpu	Displays CPU usage information based on running processes.
show system stack-ports	Displays information about the stacking ports on all switches in the stack.
show system	Displays the current status of all stack members or a specific member.

show hardware system-flow

Displays Layer 2 ACL or QoS data for the selected stack member and stack member port-pipe.

Syntax show hardware system-flow layer2 stack-unit *0-5* port-set *0-0* [counters]

Parameters

acl | qos	For the selected stack member and stack member port-pipe, display which system flow entry the packet hits and what queue the packet takes as it dumps the raw system flow tables.
stack-unit *0-5*	Enter the keyword stack-unit followed by 0 to 5 to select a stack member ID.
port-set *0-0* [counters]	Enter the keyword port-set with a port-pipe number — 0. (OPTIONAL) Enter the keyword counters to display hit counters for the selected ACL or QoS option.

Defaults none

Command Modes EXEC Privilege

Command History

Version 8.3.17.0	Supported on M I/O Aggregator

Example 1 **Figure 25-17. show hardware system-flow layer2 counters Command Example**

```
FTOS#show hardware system-flow layer2 stack-unit 0 port-set 0 counters
-------------------------------------------------------------------------------
        EntryId                 Description                     #HITS
-------------------------------------------------------------------------------
        2048                    STP BPDU Redirects              0
        2047                    LLDP BPDU Redirects             164904
        2045                    LACP traffic Redirects          0
        2044                    GVRP traffic Redirects          0
        2043                    ARP Reply Redirects             0
        2042                    802.1x frames Redirects         0
        2041                    VRRP frames Redirects           0
        2040                    IPv6VRRP frames Redirects       0
        2039                    GRAT ARP                        0
        2036                    IPv6 Mcast Control Traffic      128840
        2000                    VLT ARP SYNC Frames             0
        1999                    ICL Hellos                      0
        1998                    ICL MAC SYNC Frames             0
        1997                    VLT Tunneled STP Frames         0
        1995                    DROP Cases                      43207
        1917                    L3 Term Traffic ClassID 1 to Q6 0
        1916                    L3 CPU Bound Traffic ClassId 2 to Q5    0
        1915                    Unknown MCAST Packets                   0
        1792                    BGP with TTL1, L4 SRC port Redirects    0
        1791                    BGP with TTL1, L4 DST Port Redirects    0
25
FTOS#
```

Example 2 **Figure 25-18. show hardware system-flow layer2 (non-counters) Command Example**

```
FTOS#show hardware system-flow layer2 stack-unit 0 port-set 0

############### FP Entry for redirecting STP BPDU to CPU Port ################
EID 2048: gid=1,
         slice=15, slice_idx=0x00, prio=0x800, flags=0x82, Installed
              tcam: color_indep=0,          higig=0, higig_mask=0,
             KEY=0x00000000 00000000 00000000 0180c200 00000000 00000000 00000000
, FPF4=0x00
             MASK=0x00000000 00000000 00000000 ffffffff ffff0000 00000000 00000000
,      0x00
           action={act=Drop, param0=0(0x00), param1=0(0x00)},
           action={act=CosQCpuNew, param0=7(0x07), param1=0(0x00)},
           action={act=CopyToCpu, param0=0(0x00), param1=0(0x00)},
           action={act=UpdateCounter, param0=1(0x01), param1=0(0x00)},
           meter=NULL,
           counter={idx=0, mode=0x01, entries=1}

################ FP Entry for redirecting LLDP BPDU to RSM ################
EID 2047: gid=1,
         slice=15, slice_idx=0x01, prio=0x7ff, flags=0x82, Installed
              tcam: color_indep=0,          higig=0, higig_mask=0,
             KEY=0x00000000 00000000 00000000 0180c200 000e0000 00000000 00000000
, FPF4=0x00
             MASK=0x00000000 00000000 00000000 ffffffff ffff0000 00000000 00000000
,      0x00
           action={act=Drop, param0=0(0x00), param1=0(0x00)},
           action={act=CosQCpuNew, param0=7(0x07), param1=0(0x00)},
           action={act=CopyToCpu, param0=0(0x00), param1=0(0x00)},
           action={act=UpdateCounter, param0=1(0x01), param1=0(0x00)},
           meter=NULL,
           counter={idx=1, mode=0x01, entries=1}

############### FP Entry for redirecting LACP traffic to CPU Port ############
EID 2045: gid=1,
         slice=15, slice_idx=0x02, prio=0x7fd, flags=0x82, Installed
              tcam: color_indep=0,          higig=0, higig_mask=0,
             KEY=0x00000000 00000000 00000000 0180c200 00020000 00000000 00000000
, FPF4=0x00
             MASK=0x00000000 00000000 00000000 ffffffff ffff0000 00000000 00000000
,      0x00
           action={act=Drop, param0=0(0x00), param1=0(0x00)},
           action={act=CosQCpuNew, param0=7(0x07), param1=0(0x00)},
           action={act=CopyToCpu, param0=0(0x00), param1=0(0x00)},
           action={act=UpdateCounter, param0=1(0x01), param1=0(0x00)},
           meter=NULL,
           counter={idx=2, mode=0x01, entries=1}

################## FP Entry for redirecting GVRP traffic to RSM ###########
EID 2044: gid=1,
         slice=15, slice_idx=0x03, prio=0x7fc, flags=0x82, Installed
              tcam: color_indep=0,          higig=0, higig_mask=0,
             KEY=0x00000000 00000000 00000000 0180c200 00210000 00000000 00000000
, FPF4=0x00
             MASK=0x00000000 00000000 00000000 ffffffff ffff0000 00000000 00000000
,      0x00
           action={act=Drop, param0=0(0x00), param1=0(0x00)},
           action={act=CosQCpuNew, param0=7(0x07), param1=0(0x00)},
           action={act=CopyToCpu, param0=0(0x00), param1=0(0x00)},
           action={act=UpdateCounter, param0=1(0x01), param1=0(0x00)},
           meter=NULL,
           counter={idx=3, mode=0x01, entries=1}

################## FP Entry for redirecting ARP Replies to RSM #############
EID 2043: gid=1,
         slice=15, slice_idx=0x04, prio=0x7fb, flags=0x82, Installed
              tcam: color_indep=0,          higig=0, higig_mask=0,
             KEY=0x00000000 00000000 00000000 00000000 00000000 00000806 00001600
, FPF4=0x00
             MASK=0x00000000 00000000 00000000 00000000 00000000 0000ffff 00001600
,      0x00
           action={act=Drop, param0=0(0x00), param1=0(0x00)},
           action={act=CosQCpuNew, param0=6(0x06), param1=0(0x00)},
           action={act=CopyToCpu, param0=0(0x00), param1=0(0x00)},
           action={act=UpdateCounter, param0=1(0x01), param1=0(0x00)},
!--------- output truncated -----------------!
```

26

Internet Control Message Protocol (ICMP) Message Types

This chapter lists and describes the possible internet control message protocol (ICMP) Message Types resulting from a ping. The first three columns list the possible symbol or type/code. For example, you would receive a ! or 03 as an echo reply from your ping.

Table 26-1. ICMP Messages and Their Definitions

Symbol	Type	Code	Description	Query	Error
•			Timeout (no reply)		
!	0	3	echo reply	•	
U	3		destination unreachable:		
		0	network unreachable		•
		1	host unreachable		•
		2	protocol unreachable		•
		3	port unreachable		•
		4	fragmentation needed but don’t fragment bit set		•
		5	source route failed		•
		6	destination network unknown		•
		7	destination host unknown		•
		8	source host isolated (obsolete)		•
		9	destination network administratively prohibited		•
		10	destination host administratively prohibited		•
		11	network unreachable for TOS		•
		12	host unreachable for TOS		•
		13	communication administratively prohibited by filtering		•
		14	host precedence violation		•
		15	precedence cutoff in effect		•
C	4	0	source quench		•
	5		redirect		•
		0	redirect for network		•
		1	redirect for host		•
		2	redirect for type-of-service and network		•
		3	redirect for type-of-service and host		•
	8	0	echo request	•	

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Table 26-1. ICMP Messages and Their Definitions

Symbol	Type	Code	Description	Query	Error
	9	0	router advertisement	•	
	10	0	router solicitation	•	
&	11		time exceeded:		
		0	time-to-live equals 0 during transit		•
		1	time-to-live equals 0 during reassembly		•
	12		parameter problem:		
		1	IP header bad (catchall error)		•
		2	required option missing		•
	13	0	timestamp request	•	
	14	0	timestamp reply	•	
	15	0	information request (obsolete)	•	
	16	0	information reply (obsolete)	•	
	17	0	address mask request	•	
	18	0	address mask reply	•	